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BIRD NOTES FROM SOUTHERN WISCONSIN

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Any restricted area in our latitude that combines rugged, heavily wooded bluffs, large marshes, sandy prairies and other waste lands, with lakes, creeks, rivers, sloughs, and wooded bottoms, is certain to have a varied and abundant bird population. Such a place is found in south-central Wisconsin, within a radius of fifteen miles of the villages of Prairie du Sac and Sauk City, where Sauk, Columbia, and Dane Counties border on the Wisconsin River.

A residence of five years and various collecting trips prior to 1913 had made me familiar with the region and awake to its bird study possibilities. Therefore the opportunity of revisiting this favorite section — and renewing acquaintances both human and avian, was welcomed. Here the greater part of the time was spent from April 9 to June 13, 1921, collecting material for several large bird groups for the Milwaukee Public Museum, and all specimens mentioned as taken on this trip are in the collection of that institution.

One side trip was made to Fox Lake, Dodge County, where I joined Mr. George Shrosbree, Chief Taxidermist of the Museum, on May 17 for ten days in a Great Blue Heron colony, making the necessary collections and studies for a large group of these picturesque birds, and another to a Black-crowned Night Heron colony, near Darlington, Lafayette County, June 3 and 4, on a similar errand. The latter trip was made in company of Messrs. Shrosbree and E. D. Ochsner in the latter's automobile, a fine cross-country drive totalling about one hundred and forty miles.

The remainder of our stay at Prairie du Sac was spent visiting favorable localities in all directions by auto, motor boat, and on foot. We made our headquarters while here at the home of Mr. Ochsner, taxidermist, who has a collection of local birds containing many rarities.

The village is located on the banks of the Wisconsin River, a mile below the huge power dam, completed about 1915. The water is backed up from here for fifteen miles or more, forming Lake Wisconsin, one of the most interesting bodies of water, from an ornithological standpoint, that it was ever my good fortune to visit. Hundreds of acres of heavy bottom timber was flooded, now standing in twelve to twenty or more feet of water, a wierd gray forest, the gaunt skeletons of the larger treees alone remaining. This body of water, a mile and a half to two miles across in some places, must be navigated with caution in stormy weather, being full of snags, and stumps of treees cut off in winter at ice level. This unique lake supports much interesting bird life, being alive at times in spring and fall with migrating water fowl. Here in summer Kingbird nests are to be found over a half mile from shore, in crotches as low as two feet above the water, while Purple Martins and Tree Swallows share the hundreds of natural cavities and old woodpecker holes with Great Crested Flycatchers and even a few English Sparrows! Flickers, Red-headed, Hairy and Downy Woodpeckers also nest here as well as the Great Blue Herons and Double-crested Cormorants, to be described later.

West and northwest of Prairie du Sac lies slightly rolling Sauk Prairie. The southern half is a sandy region, with many uncultivated fields, and knolls covered with coarse bunch grass, natural home of Prairie Hens, Western Meadowlarks, Migrant Shrikes, and in spring, swarms of Lapland Longspurs. This region borders the Wisconsin River valley on the south, with its heavy bottom land timber and backwater sloughs, where Pileated Woodpeckers, Barred Owls, and such southern species as Prothonotary Warblers, Blue-winged Warblers, Yellow-breasted Chat, Red-bellied Woodpeckers and others partial to such environment breed. Here also the rare Kentucky Warbler was taken in 1913 (see Auk, Jan. 1917, p. 67). Back from the river on both sides are extensive savannas or marshes as well as sandy oak ridges.

The north half of Sauk Prairie is a fertile farming section, bordered on the west by wooded sandstone bluffs, inhabited by hawks, owls, Ruffed Grouse and others. North of the prairie is the rugged quartzite range known as the Baraboo Bluffs, which includes the beautiful Devil's Lake region.

This unspoiled range, so rocky and rugged that it still retains much heavy timber, is the source of Otter Creek and

other spring-fed streams, along which such rare Wisconsin-species as Acadian Flycatcher and Louisiana Water-Thrushes breed. Blackburnian, Black-throated Green and other warblers usually breeding farther north are occasionally seen in summer, while Oven-birds, Nashville, Cerulean, Chestnut-sided, and Black and White Warblers breed more or less commonly, and Blue-winged and Golden-winged Warblers may occasionally be seen in mid-summer with their broods. Least Flycatchers, Veeries and Wood Thrushes, and a host of others are common breeders. This range is also a natural stronghold of the birds of prey. Virginia Deer and Banded Rattlesnakes are abundant.

East of the Wisconsin River the rolling hills and fertile valleys of Columbia County are attractive to many species.

The following notes are selected, either for the rarity of the species listed, or for some points of special interest:

Phalacrocorax a. auritus (Double-crested Cormorant).—These "nigger geese," as they are sometimes called, were common on the Wisconsin River when I first arrived, April 9, and reached their greatest abundance near the last of the month. They frequented certain overhanging trees growing from the river bank below Sauk City that were literally "white-washed," and a dozen to twenty birds were to be seen here at almost any hour. But by far the greater number frequented Lake Wisconsin near Merrimac and Okee, where as many as seventy-five were seen in one tree. In this dead, partly submerged forest, Great Blue Herons had established a colony of about thirty nests, and in the same trees, but invariably a few feet lower, we counted thirteen cormorant nests on our first visit, April 10. Although on each nest sat a cormorant, with others on the limbs nearby, none of the nests contained eggs at this time, though those of the herons mostly contained incomplete sets. The greater number of nests were bunched in a few trees, one containing seven heron nests and three of the cormorants, and another five of heron and three of cormorant. A severe storm later destroyed a few heron nests and all but six of those of the cormorants. Curiously, though adults were constantly on the nests, it was not till May 1 that we found a complete set of the cormorant eggs, a set of four being collected and others incomplete, seen. Young, just hatched, were found May 26, three being collected, and a "pipped" egg hatched in an incubator. Newly hatched young were winey black above and slightly pinkish below, and polished all over as if with stove

blacking. When first hatched they could open their eyes, though the aperture was little larger than a pinhead. Stomachs of three one-day-old young were found to contain coarse scales and other fish remains. One had the back spine of a fair-sized bullhead in the stomach. By the first week in June most of the migrating cormorants had passed on, leaving those that were nesting and many non-breeding birds around the colony.

Most of the cormorants did their fishing in the shallow bays that extended a considerable distance into what was formerly marsh and tamarack swamp. Here it was a common sight to see fifteen or twenty of these black fellows sitting on some favorite snag or dead tree sunning themselves with partly extended wings, as they digested their last meal.

When they commenced nesting all the adults had full crests and intense bluish-green dottings around their emerald eyes. By the time the young were hatched the adults collected were found to have lost their crests, and the eye ornaments had dimmed somewhat.

Some other interesting facts were brought to light by collecting this material. One fine large individual that had been sitting on four addled eggs for a long time, proved to be a male when collected, the smaller, equally glossy bird that usually sat nearby being presumably his mate. But very often he was seen to have a light breasted companion, this bird proving to be a non-breeding male. There were a number of these non-breeders, all more or less mottled on their breasts and necks with lighter feathers.

The stomachs of seven adults shot April 10 all contained fish. Five each held one large bullhead of nearly a pound weight, swallowed spines and all, while each of the others held a pike that would weigh over a pound. Others examined from time to time contained partly digested bullheads or more rarely other fish.

Breathing entirely through their mouths, these birds kept them open wide while flying excitedly around their nests.

Double-crested Cormorants had nested in this region the two preceding years but not before that, according to information I later was able to obtain. Mr. Laurence Keller of Prairie du Sac saw many of these birds, mostly in immature plumage, near three distinct nesting areas in mid-summer of 1920. Others mentioned seeing half grown young sitting on the shore of the lake opposite the colonies in summer. The cormorant nests are

deep and solidly built of good sized sticks, well lined with soft inner bark strips, and were completely "limed" before the eggs were laid. The heron nests in this colony were of very unusual size, due perhaps to the ease with which brittle dead sticks could be obtained nearby.

Branta c. canadensis (Canada Goose).—I was informed that these geese wintered in much larger numbers than is usual on Sauk Prairie, due perhaps to the open winter and lack of deep snows. Many thousands were seen by Ochsner, Albert Gastrow, and me on a row-boat trip April 10, through the flooded woods of Lake Wisconsin. At times flock after flock would rise from different parts of the timber and mill around until the air seemed full of geese. Many hundreds still present on April 20. Three or four small flocks frequented Sauk Prairie until the first week in May. They were extremely regular in their habits in fair weather. Flying to the rye fields from the river bars where they had spent the day, a few minutes before sundown, they would remain until dark. Appearing again in the morning just before sunrise, they would remain and feed until the farmers started to work in the fields. In rainy weather when no teams were out, they remained in the rye most of the day.

Wishing to collect a few fine specimens for a group, Mr. Ochsner and I concealed ourselves in rebuilt corn shocks in a field that they frequented regularly. Soon after daylight a flock of about twenty alighted a few rods in front of my location, followed in a few minutes by about forty that came in with much argument and flapping directly behind. My part of the field, which included a considerable rise in the ground, seemed to be favored by the birds this morning, and I could hear them talking in hoarse undertones as they fed my way. Soon they commenced trooping by in twos and threes, pulling corn off the shocks or standing erect looking for danger. Occasionally they would quarrel a little and none dared to approach one cranky old gander with a lame leg. I scarcely breathed as they commenced to pull at the rear of the shock that concealed me, one finally coming around and peering in, then shying off like a spirited horse from a paper in the road. Though two fine specimens were collected, it was the presence of these wary creatures all about, almost within arms reach, that will linger in the memory. So shy are they that they never returned to this field before leaving for the north, though no other corn was out on the entire prairie.

Ardea herodias (Great Blue Heron).—A flourishing, well-

protected colony of about one hundred and fifty pairs occupy the tallest timber in a large piece of woodland near the shores of Fox Lake, Dodge County. This colony is partly on the property of Mr. Matt. Baird, who is interested in the birds and has protected them. Most of the nests are in living oaks, elms, and maples, from seventy to eighty-five feet above the ground. At the time of our visit, May 17 to 23, the majority held young, from little fellows just hatched, to lusty youngsters a couple of weeks old, while a few contained eggs. Swarms of mosquitoes made Mr. Shrosbree's life miserable below, as he collected the selected specimens of adult herons with his twenty-two rifle, I, meanwhile enjoying (?) the fishy stench among the nests above. We were greatly assisted in the difficult task of securing and lowering the necessary nests and tree sections by Mr. Baird, who is very expert in the tree tops.

The adults of this colony were exceptionally tame, though the great height of the nests and the density of the foliage made intimate studies of the nest life impracticable. Here at least they cannot be considered a menace to the game fish, as all evidence in their nests and in the stomachs of fourteen adults examined, showed that they were subsisting almost exclusively on carp. One large fellow had two perfectly fresh ones nine inches in length in his neck, and another of over eleven inches in his stomach.

Nycticorax nycticorax naevius (Black-crowned Night Heron).—A colony with about fifty occupied nests, three miles from Darlington, Lafayette County, was visited May 2. At this time it was in a thriving condition, most of the nests containing incomplete sets of eggs. On our last visit, June 3 and 4, we were informed that the colony had been "shot up" by boys. The twelve to fifteen remaining nests mostly held young, from little fellows just hatched to large ones climbing on the edges of their nests and on nearby limbs, while a few still held eggs. The adults were now extremely wild and wary.

This colony was located in second growth timber on a side hill a short distance from a small creek and a half mile from the Pecatonica River, on the farm of Mr. Charles Miller, who endeavors to protect them.

Tympanuchus a. americanus (Prairie Chicken).—The morning and evening gatherings of cock Prairie Chickens on some favorite knoll where countless generations before them gathered, fought, "boomed," and strutted, and where their own descendants

will instinctively gather if allowed to live, is an extremely interesting habit, the exact nature of which is imperfectly understood. The "cooing ground" on the sandy west end of Sauk Prairie has been used each Spring for over thirty years to his own knowledge, Mr. Ochsner says, the birds always using the same knoll, whether in rye, stubble, or grown to grass. The following observations were made from a shallow pit dug twenty-five yards from the knoll, while making the necessary studies and collecting the specimens and accessories for a group.

The "cooing" starts sometime the last of March and continues well into June, each day that the weather is suitable. Ochsner and I made about twenty trips mornings and evenings. The birds usually arrive very early, some were on the grounds before daylight two mornings that we tried to beat them, but on other occasions the bulk of them came in shortly after daylight. A few jumps high in the air as if to take the stiffness out of his legs and the bird was ready to perform. In "booming" the head was lowered and well out, wings drooped till their tips touched the ground, tail spread and cocked slightly forward, long neck tufts vertically erected till their tips were close together, and the ornamental eye patches of bright yellow skin extended to the utmost. The wings were quickly shaken, producing a slight rattling sound, the lavender bordered orange neck sacks inflated to the size of small oranges, then comes the resonant C-A-O-O-O-O-O, H-O-O, H-O-O, rising and in the same tones as do, ra, me, of the musical scale. This note carries a long distance on the still morning air. I have heard it over water where the nearest land was nearly two miles away. Two cackling calls, much like those of domestic roosters, were frequently heard when the excitement was high, one a loud ka-ka-ka-ka-ka-a-a-a-a, and the other a long drawn out q-u-a-h. Sometimes two cocks would "boom" and approach one another sideways in a threatening manner. When actually fighting the tufts were down and neck sacks collapsed. They jump up and down, sometimes completely over one another, dislodging many feathers. When they back away each seems glad that it is over.

In the excitement of their rapid rushes, cooing and combat, others may gather till seven or eight are close together. Then may come a lull, the birds returning to their well trodden stands, each a few feet from his nearest rival, till another fight occurs, and the excitement again runs high. The center of the

knoll, nearly bare of rye, seems to be occupied by the more powerful birds. On two different mornings these birds were seen to leave in a body after about two hours' performance, the vacated center being immediately taken by a half dozen others who had been standing here and there on the outskirts. These presumably weaker roosters kept the ball rolling for another full hour!

Specimens collected were in excellent condition in spite of their strenuous life at this season. Four of the largest weighed exactly two and a half pounds each, and the smallest two and a quarter. As Chapman mentions in "Camps and Cruises" only the cocks gather to perform, at least we saw no hens, though twelve to sixteen roosters were usually present. Late in the season two cocks went through the performance on bunch grass knolls less than a half mile distant, and nearby a lone hen was flushed and collected. Almost every morning the performing birds were harried by a large female Marsh Hawk, apparently only for mischief, as she never came anywhere near making a capture. All the brilliant markings on the assembled roosters instantly vanished on the hawk's appearance, and they would fly only if forced to do so.

The region including this "cooing ground" is full of sand burrs and weeds, some of the fields resting for years between crops. Western Meadowlarks fill the air with their music, and the restless swarms of Lapland Longspurs constantly circle their favorite fields. To complete the picture of a western prairie, I one morning jumped two Jack Rabbits, survivors or descendants of some introduced many years before and supposed to have been long since exterminated.

Falco peregrinus anatum (Duck Hawk).—Some of the most interesting of our season's experience were with these spectacular falcons, one eyrie being located in Sauk County and another in Columbia. For an extended account of these "finds" see Wilson Bulletin for December, 1921.

Falco c. columbarius (Pigeon Hawk).—This little understudy of the Duck Hawk is quite rare in this section. The only one seen was an adult in worn plumage collected near Mazomanie, Dane County, on May 2, 1921. The stomach contained the remains of some kind of sparrow.

Asio wilsonianus (Long-eared Owl).—A nest containing five eggs was found five miles northwest of Prairie du Sac on May 15, in a cedar thicket. As usual they were in an old crow nest,

fifteen feet up a small cedar. The Long-eared Owl is a regular but by no means common breeder in this section. The behavior of this particular female was so unusual that a short description may prove of interest.

When first discovered this bird paid no attention to kicks or shakings at the tree's base and only left her nest when I reached her level in another sapling a yard away, then reluctantly, with ruffled feathers and snapping beak. She was now completely carried away with wrath and excitement, attempting to return to her nest, then alighting momentarily on the dead limbs of a nearby oak, swelling to twice her natural size, and her eyes fairly blazing. All the time she was uttering the loud "yows" and low, throaty growls such as precede a fight between angry tom cats. The similarity of tone was so great that it seemed impossible that the sounds issued from the throat of a bird. This performance was kept up for fifteen or twenty minutes, the bird frequently approaching within three feet. Finally I retired and studied her from a distance with binoculars. Her fury gradually subsided, though she trembled and shook and jumped at imaginary sounds, being evidently in a highly nervous state.

Friends with a camera the following day found her less excitable, and not so inclined to approach closely. Later in the week, when Dr. W. D. Richardson made a special trip to interview her, thoroughly equipped for taking pictures, she absolutely refused to perform, though using her remarkable vocal powers to the fullest. Unfortunately this nest was broken up, presumably by boys, so we had no further opportunities to study her interesting behavior. The male was shy at all times, giving cat calls from a safe distance.

Phlæotomus pileatus abieticola (Northern Pileated Woodpecker).—Certainly has not decreased and has probably increased slightly in the river timber in the last eight years. On the fine bright evening of April 17, with the last of the snow on the ground from the terrible blizzard of the previous twenty-four hours, the rolling tattoos of these fine birds and their smaller kin, and the calls of the Red-bellied Woodpeckers particularly, were the predominating sounds of the river timber, followed as darkness fell, by the equally characteristic notes of the numerous Barred Owls.

A nest of the pileated was found April 11, the female appearing at her door about twenty feet up a dead soft maple

as I knocked, and flying immediately she recognized her caller. Fresh chips on the ground first attracted my attention. The contents of this nest was never ascertained, as to do so would have necessitated destroying the site. On the evening of May 15, over a month later, the Richardsons, Mr. Laws, and I visited the nest again, Dr. Richardson hoping to secure Graflex pictures of the woodpecker leaving the hole. This time the male was in the cavity, and pound the tree as we would at the base, we could not drive him out. At every hard knock his head would bob out an inch or so, as if driven by the force of the blow. He was only induced to leave when I climbed half way up and drove him out an inch at a time by repeated hammering! I firmly believe that the scarcity of these fine birds over a large part of their former range that is still suited to their requirements, is directly due to the shooting of every one that shows his red head, by so-called sportsmen. No true sportsman would wantonly kill such a picturesque and beneficial creature.

Empidonax virescens (Acadian Flycatcher).—Hardly as plentiful in the Baraboo Bluffs as in 1913, when many pairs nested near the headwaters of Otter Creek. Two examples were collected here, however, and a number seen and heard. A typical nest and four heavily incubated eggs were found June 12. This species is probably not as rare in southern Wisconsin as formerly supposed. Two or three pair were noted in a tamarack swamp at Calhoun, Waukesha County, on June 26.

Corvus b. brachyrhynchos (Crow).—This abundant rascal is only included because of a point of special interest. Winter roosts of the Crow are well known and have been frequently described, but I have been unable to find any records of summer roosts. Approximately five hundred Crows roosted in the Sauk City cemetery and across the road in evergreens surrounding an unused house. This daily gathering was first noticed by me on April 20, the first time I happened to be in the vicinity in the evening, and the birds still frequented the roost in undiminished numbers up to the time of our departure, June 13. They straggled in from all points of the compass about sundown, sometimes alighting in a mass in neighboring fields, or perhaps sitting around in the trees having a good time generally till roosting time. Soon after daylight they vacated the roost and left the vicinity with much cawing and general crow-racket. At first I had assumed that these were non-breeding

birds, but one shot and examined proved to be a breeding male. From the glossiness and sleek appearance of the others it seems likely that they were all males. At some future time I hope to study this roost carefully and examine a considerable number of the birds. This time was of course the height of the Crows' breeding season, and it would be interesting to know whether the females spend the nights alone at the nests, temporarily deserted by their irresponsible mates. Their relatives, the Bronzed Grackles, also have similar roosts, though the habit may be exceptional in both cases.

Sturnella neglecta (Western Meadowlark).—This fine songster is abundant on the sandy parts of Sauk Prairie. On all the low lands and in rich farming sections the eastern variety only is found, while throughout the sandy wastes the western bird holds forth in legions. The line of demarkation between these two varieties of Meadowlark as between the rich and poor land is quite sharply defined in this region. Nearby, in Dane County, in a sandy loam region, both varieties were noticed in close proximity. A nest of the Western Meadowlark with three eggs was found April 28, and another with four May 11, both in long dead grass in the sand prairie. Four males of each variety taken for comparison, show that the western bird is sufficiently lighter in coloration to make field identification easy and certain in favorable light.

Calcarius l. lapponicus (Lapland Longspur).—These longspurs gather by thousands on the sandy, weed-grown knolls in the southwestern part of Sauk Prairie during the latter part of April. They may increase day by day till the fields are alive with them, then some morning we find them gone, with the exception of a few scattering flocks. April 28 thousands were present, while next day not over fifty were seen. A few large flocks were noted in the fields near Fox Lake, Dodge County, as late as May 18. Specimens collected the last week in April were in almost complete summer plumage.

Calcarius pictus (Smith's Longspur).—These birds, ordinarily rare in Wisconsin, were seen in small numbers among the Laplands April 27 and 28, and two females and one male were collected, in almost complete summer dress. On the latter date between twenty and thirty were seen.

Chondestes g. grammacus (Lark Sparrows).—Small colonies of these handsome sparrows were noted at various places in Sauk County, and to a lesser extent in Columbia and Dane.

Rather common locally in Sauk County, around the sandy, grassy fields at the foot and part way up the sides of bluffs. Small colonies were seen on the bald tops of certain high bluffs in Columbia County, in grass and weed patches, near the gravelly spots where the Nighthawks lay their eggs. In the township of Mazomanie, Dane County, a small colony has been located for years on a bit of waste land a short distance from the river. In a general way it may be said to be partial to sandy or barren spots grown up to short grass or weeds in places that are seldom plowed.

Zonotrichia l. leucophrys (White-crowned Sparrow).—An adult female taken in the Baraboo Bluffs, Sauk County, June 6, suggests the possibility of their breeding here.

Spiza americana (Dickcissel).—A great Dickcissel year in all parts of southern Wisconsin visited. Riding along the country roads, singing males were noted as averaging six to ten to the mile. In many of the hay fields they were the commonest birds, at least three or four pair per acre.

Seiurus motacilla (Louisiana Water-Thrush).—These shy, elusive creatures are regular migrants in small numbers along the Wisconsin River valley, and a few pairs breed near the source of Otter Creek, a rushing trout brook in the Baraboo Bluffs. June 27, 1913, a nest with one egg was found, in a pocket in the bank of the brook. A few days later, finding it deserted, it was collected, as well as an adult of this species that frequented the vicinity. This spring (1921) I made a special effort to get a satisfactory breeding record, but the nearest I came to it was finding a pair June 6 feeding a big lubberly Cowbird. The female parent was collected for identification.

An early record is a specimen collected in the river bottoms in Sauk County April 17, the day after the blizzard. The bird was in the snow by a slushy pool. Although there were four or five inches of snow on the ground, S. Paul Jones and the writer listed fifty species of birds in these sheltered bottoms. This disastrous storm must have destroyed every Woodcock and Prarie Horned Lark nest in the southern counties of Wisconsin.

Thryomanes b. bewickii (Bewicks Wren).—At least two pairs of these wrens appeared in the vicinity of Prairie du Sac this last spring (1921) and I tried without success to collect a specimen to establish a clear record for the State. My friend, Mr. Albert Gastrow, told me of a species of wren new to him

that had been singing around his farm in Columbia County for a number of days. On going here on the evening of May 26 the bird was immediately located and satisfactorily studied at close range with binoculars. The white edging to the long tail and line over eye are unmistakable. The specimen fell in a tangled mass of weeds and other debris on being shot, and the best efforts of three of us hunting for half an hour failed to locate it.

Another pair took up quarters a mile away, near the east end of the Prairie du Sac bridge, just across the line in Dane County. Mr. Gastrow was also the first to find this second location, one of the birds singing off and on all day near where he happened to be working. My friends, Warner Taylor and S. Paul Jones, later studied the bird to good advantage at different times and satisfied themselves as to its identity.

Bæolophus bicolor (Tufted Titmouse).—This is another species that is extending its range northward, following the Cardinal. While the latter were entirely unknown here previous to 1916, they are now one of the abundant residents of the river bottoms and adjacent regions. Therefore I was not surprised to hear the loud whistle of the Tufted Tit in the village of Prairie du Sac where the male of a pair was collected April 13, 1921. Two were heard calling in the river timber below Sauk City April 23. They have been reported and at least one taken at other points in southern Wisconsin recently also. Kumlien and Hollister (Birds of Wisconsin, 1903) say of this species, "A straggler from the south. In the museum of the University of Wisconsin there is a single specimen of the tufted tit, shot by Mr. N. C. Gilbert, December 15, 1900, near Madison. The bird was alone, and this is doubtless the only record for the state." At the present rate of extension this interesting bird, as well as the Cardinal, should be common in suitable localities in southern Wisconsin within a few years.

BREEDING WARBLERS AROUND ATLANTA, GEORGIA

BY WM. H. LA PRADE, JR.

The writer believes that there is no locality in the South where there is a greater variety of breeding Warblers than at Atlanta. With an altitude of 1050 feet, which makes it the highest city of its size east of the Mississippi, there are found here some species normally breeding much farther north. The hill country of the South has had so few competent observers that it has been largely guess work when limits have been set for the southern breeding range of many species, and it is probable that not a few birds are found regularly hundreds of miles nearer the Gulf than is generally supposed. The writer hopes that other southern observers may contribute such data as they have bearing on this subject so that we may determine whether these are exceptional records, indicating sporadic breeding, or whether the above theory is correct.

It is safe to say that 16 warblers breed within six miles of the center of Atlanta, and some notes about each species follow:

Mniotilta varia: Black-and-white Warbler. My earliest record for spring arrival is March 21, and by April 1 it can always be found. Only a few remain to breed. Mr. W. J. Mills found a nest with four eggs six miles south of the city, and Mr. D. C. Peacock a similar set four miles north. It breeds regularly but sparingly 20 miles north, where Mr. D. V. Hembree has taken several sets.

Helinaia swainsoni: Swainson's Warbler. Mr. Robert Windsor Smith took the first specimen, four miles to the east, May 4, 1898, and the writer took the next, April 29, 1907. In May, 1916, I discovered a male in full song on the outskirts of the city. The bird was unsuspecting, and with a dainty step, reminding one of the Oven-bird, walked to within ten feet of where I was concealed, stopping every few moments to pour out its rich and ringing song. So far as I knew, this species had been regarded as a bird of the river valleys or coastal plains, so I never suspected that it might breed at an altitude of 1050 feet. But on May 20, 1920, when in the same vicinity searching for nests of the Kentucky Warbler, I heard excited chippings, which led me to recognize a Swainson's Warbler in a tangle of vines, where I soon located the completed but empty nest. On May 27, after securing photographs of the female on nest and of the nest

and eggs in situ, I collected the nest and three eggs. It was three feet from the ground, in vines slung under a small elm, and rather roughly built of dead leaves, rootlets, and pine needles. This was in thick, damp woods, near a stream bordered by extensive thickets, in a locality like those described by Mr. Brewster and Mr. Wayne, except for the absence of canes.

Helmitheros vermivorus: Worm-eating Warbler. No nest has been found here, but a few undoubtedly breed. One pair was observed through the breeding season of 1916, and one female in slightly worn plumage was shot June 1, 1916, and is now in Emory University. Twice I have searched in vain while excited females indicated well-hidden treasures. Chapman notes exceptional breeding in North Carolina, Alabama, Mississippi, and Louisiana, but I suspect that they may be found in small numbers throughout the hill country in this belt of states.

Vermivora pinus: Blue-winged Warbler. While collecting some late migrants on May 3, 1916, I shot a female Blue-wing, and on dissection was surprised to find an egg nearly ready to lay. Later in the season Mr. D. C. Peacock saw a family of young Blue-wings in care of the mother. Chapman gives northern Kentucky, Maryland, and Pennsylvania as the southern breeding limit.

Dendroica æstiva æstiva: Yellow Warbler. Having so easily located nests of this warbler in Missouri, it is hard to understand why I have not found them here. Abundant in migration, only a few found in the breeding season, around willow trees in pastures or along streams. Repeated search in trees and bushes has been in vain. More should breed here, where there are no Cowbirds to disturb.

Dendroica cerulea: Cerulean Warbler. I know of only one piece of woods where it breeds, but several pairs certainly nest there every season. High up in the sycamores and poplars the distinctive song of the Cerulean may be heard through May and June, but one needs a real rubber neck to keep an eye on these tiny singers, which look no bigger than bumble-bees in the tree tops. After the leaves fell one winter I located a nest, presumably of this species, saddled on a limb of a giant sycamore which I searched in vain the preceding May.

Dendroica dominica dominica: Yellow-throated Warbler. This is another species that has baffled local oölogists. Living in the highest pines, where they may be found from the middle of March until October, the nests are doubtless indistinguishable from

bunches of pine straw and cones, and binoculars focussed for a long time on building birds is probably the only way to locate a nest.

Dendroica vigorsi: Pine Warbler. This bird is much more abundant in winter than in summer, and local breeders are nesting before many that summer farther north leave us. While some Pine Warblers nest in high pines like the preceding species, other pairs are more lowly minded, one nest with young being only 15 feet up. The three local sets of which I have record were completed between March 15 and March 27, each nest having feathers in the lining.

Dendroica discolor: Prairie Warbler. Another early arrival. Sometimes seen during the last week in March. It frequents bushy fields, and the nest is from two to six feet from the ground. Full sets, usually four, with one set each of three and five, are complete between May 5 and May 10.

Seiurus aurocapillus: Oven-bird. One or more pairs have spent the summer five miles east of the city for several years, but no nest has been found. Mr. D. V. Hembree has taken several sets 20 miles north. Chapman states that they breed southward in the Allegheny mountains to South Carolina, but this range should be extended to include the section of Georgia north of Atlanta, as they unquestionably breed regularly in many places in this area.

Seiurus motacilla: Louisiana Water-Thrush. A regular breeder, arriving the latter part of March and nesting early enough in April to have young on the wing by the middle of May. Almost every small stream, with banks high enough to afford nesting places, has one or more pairs, but the nests are so hard to locate that I have succeeded in finding only two, one with young, and one with four eggs.

Oporornis formosus: Kentucky Warbler. Chapman notes the breeding of this species at Caesar's Head, S. C., as if it were exceptional so far south, but this is the most abundant breeding warbler around Atlanta, except the Hooded and the Chat, though nests are much harder to find than those of bush building species. I know of one large tract of woods in which I believe that 20 nesting pairs is a conservative estimate. Nests I have succeeded in finding were in rather open woods, and were located by flushing the brooding female. May 15 to May 25 is the time to expect fresh sets, and twice I have found sets of five.

Geothlypis trichas trichas: Maryland Yellow-throat. This

is another regular breeder that seems to practice more concealment than I found to be the case around St. Louis, nesting places being confined to marshy places.

Icteria virens virens: Yellow-breasted Chat. Very abundant. I have found three and four nests in a day, and in much more accessible places than those reported by Mr. Wayne and Mr. Erichsen in the Auk. Nearly all sets are of four eggs, a few having only three.

Wilsonia citrina: Hooded Warbler. One of the characteristic birds of this section, arriving the first week in April, full sets being found from May 10 to June 10. Nests are from six inches to three feet from the ground, in bushes, canes, or vines.

Setophaga ruticilla: Redstart. Chapman gives exceptional records of southern breeding at Greensboro, Ala., and Jackson, Miss. The writer believes that this species nests in many localities in the northern half of Georgia. In the past five years five nests with eggs or young have been found near the spot where the nest of Swainson's Warbler was discovered, all being in birch or elm trees, at a height of from 12 to 35 feet.

The Parula Warbler has never been found breeding here, though it breeds on the Georgia coast and probably in the mountains. The Prothonotary Warbler breeds near Augusta, but has never been seen around Atlanta. Bachman's Warbler has been recorded here once as a migrant, April 18, 1914. The late Mr. James Sanford told me of following a singing male for nearly three hours, during which time he had many good views of him through field glasses, and once was within 15 feet of him. One would not expect this species here even as a migrant, but after my experience with Swainson's Warbler I am not disposed to say that any warbler breeding in the South and appearing here in migration may not also breed. At any rate, no harm is done in entertaining the dream that even this rarest of southern warblers may some day be added to our breeding list. The Golden-winged Warbler was reported by Gearhardt as breeding in northwest Georgia, as recorded in Baird, Brewer, and Ridgeway, but some doubt seems to attach to his records. The Black-throated Green, the Blackburnian, and Cairn's Warblers are supposed to breed in the mountains of North Georgia, but we can scarcely hope to add them to our Atlanta list.

NOTES ON THE BIRDS OF CUMBERLAND ISLAND, GEORGIA

BY T. GILBERT PEARSON

The most southern of all the Sea Islands that skirt the coast of the State of Georgia is Cumberland Island, separated from Florida by the waters of the little bay up which one would approach Fernandina from the sea. It lies some distance from the mainland and the intervening territory is covered with extensive salt marshes, through which winds a navigable creek, that composes part of the inland passage used by small boats bound up or down the coast.

About forty years ago Thomas M. Carnegie of Pittsburgh, purchased almost the entire island and near its southern end built a magnificent home, with fountains, flower gardens and other attractive surroundings. This house, "Dungeness," is one of the most elaborate along the Georgia coast, and is a familiar sight to those who in cruising the Atlantic coast, seek the shelter of the Inland Passage.

As Mr. Carnegie's children matured they in turn built homes on the island, occupying the sites where once stood the wide-galleried houses of the old plantation homes. The new owners have never engaged in agricultural pursuits and most of the old fields are now covered with bushes and second-growth trees. The Island also contains much primeval forest land, including extensive areas of oak, tulip, poplar and other hardwood trees indigenous to the region. There is an extensive area of sand-hills covered with beautiful forests of long-leaf pines. There are fresh and saltwater marshes, numerous freshwater ponds and extensive swamps.

Some hunting is indulged in during the winter months, but as no one is permitted to shoot there except the Carnegies and their friends, and as this shooting is not extensive, the wild life has been left in almost undisputed control of this great and varied region. Virginia Deer are abundant and they are in evidence everywhere as one travels about the Island. In no place have I found Wild Turkeys so plentiful.

On May 2, 1921, I landed on the Island and remained the guest of Andrew Carnegie, 2nd, until the morning of May 6. My host graciously put at my disposal every convenience of the Island in the way of automobiles, boats and guides, and in fact accompanied me almost constantly, paddling the canoe while I

fished, photographed alligators (which swarm in the swamps and ponds) and hunted birds' nests.

The following is a list of the 97 species of birds seen on the Island or over the waters in the immediate vicinity. Others were observed but not at sufficiently close range to make identification positive:

1. Herring Gull (*Larus argentatus*).
   Two in immature plumage were seen on the beach May 3.
2. Laughing Gull (*Larus atricilla*).
   Thirty were counted at various points flying near the beach on May 3. Several were immature.
3. Common Tern (*Sterna hirundo*).
   Several were in sight May 2 and 5.
4. Least Tern (*Sterna antillarum*).
   Noted daily flying about the waters near Dungeness.
5. Black Skimmer (*Rynchops nigra*).
   A group of three Skimmers was seen. The birds were feeding from the surface as they flew leisurely by perhaps fifty yards from shore.
6. Water-Turkey (*Anhinga anhinga*).
   An Anhinga with wings spread was seen standing on a dead tree on one of the ponds May 2, and another flew by shortly afterward.
7. Florida Cormorant (*Phalacrocorax auritus floridanus*).
   Ten individuals were counted. The bird is not known to breed on the Island.
8. Brown Pelican (*Pelecanus occidentalis*).
   On May 2 two adults were seen flying over the bay near the southern shore of the Island.
9. Wood Duck (*Aix sponsa*).
   Three pairs noted. This species undoubtedly breeds here commonly.
10. Surf Scoter (*Oidemia perspicillata*).
    Five counted near the Dungeness wharf on the morning of May 6.
11. White Ibis (*Guara alba*).
    Nineteen adult birds observed. Seventeen were in one flock. There appears to be no record of any nesting colony having occupied the Island.
12. Ward's Heron (*Ardea herodias wardi*).
    A common species. Breeds.
13. Egret (*Herodias egretta*).
    A colony of Herons and Egrets have for many years built their nests in the trees and bushes bordering one of the ponds on the Island. The spring of 1921 was a very dry one and the water in the pond became so low that the trees of the rookery were left on dry ground. Egrets, Little Blue and Louisiana Herons rarely continue to use their breeding grounds under such conditions. Hence the whole colony this spring departed to a swamp so difficult to penetrate that although we saw Egrets and other Herons converging their flight to the new nesting place we did not, upon advice of Mr. Carnegie, attempt to visit the colony. This species appeared to be somewhat more plentiful than the Snowy Egret.
14. Snowy Egret (*Egretta candidissima candidissima*).

Seen daily on Ashley Pond and elsewhere. Perhaps twenty noted in all. Has been known to breed here for many years.

15. Louisiana Heron (*Hydranassa tricolor ruficollis*).
Appeared to be the most abundant Heron on the Island. Breeds.

16. Little Blue Heron (*Florida cærulea*).
Common and undoubtedly breeding.

17. Green Heron (*Butorides virescens virescens*).
One nest with eggs examined. Several birds seen.

18. Black-crowned Night Heron (*Nycticorax nycticorax nævius*).
Common species; five nests found.

19. Yellow-crowned Night Heron (*Nyctanassa violacea*).
A dozen or more seen. Doubtless breeds in the swamps.

20. Wayne's Clapper Rail (*Rallus crepitans waynei*).
Often heard calling from the marshes.

21. Purple Gallinule (*Ionornis martinicus*).
Appeared to be common. Its notes often heard in the frashwater marshes about the ponds.

22. Florida Gallinule (*Gallinula galeata*).
One seen in a pond near the sand dunes.

23. Least Sandpiper (*Pisobia minutilla*).
Several small flocks were constantly on the beach and the neighboring flats.

24. Semipalmated Sandpiper (*Ereunetes pusillus*).
Were flocking with Least Sandpipers.

25. Yellow-legs (*Totanus flavipes*).
On May 3 and 4 a flock of about seventy Yellow-legs were watched as they fed in a shallow fresh water pond near the duck house.

26. Solitary Sandpiper (*Helodromas solitarius solitarius*).
Three or four seen about the fresh water ponds.

27. Willet (*Catoptrophorus semipalmatus semipalmatus*).
Three or four seen flying about the marshes. Undoubtedly they breed here regularly.

28. Spotted Sandpiper (*Actitis macularia*).
Several were recorded.

29. *Hudsonian Curlew* (*Numenius hudsonicus*).
One flock of five was seen in flight May 2. Two birds appeared the morning of May 6.

30. Semipalmated Plover (*Ægialitis semipalmata*).
Perhaps twenty individuals were feeding along the beach May 3 and 4.

31. Wilson's Plover (*Ochthodromus wilsonius*).
Common on the dry beaches and breeding.

32. Ruddy Turnstone (*Arenaria interpres morinella*).
One flock seen May 3 and two other flocks May 4.

33. Oyster-catcher (*Hæmatopus palliatus*).
One found on the beach May 4.

34. Wild Turkey (*Meleagris gallopavo silvestris*).
Wild Turkeys appear to be everywhere on the Island. Mr. Carnegie said that the thirty or forty killed every winter seemed to have no effect on their numbers, which continue to increase every year. These birds were seen frequently in the pasture, in the woods, or along the

roadside. Mr. Carnegie and I each caught a young one but a few days old, on May 4. The same afternoon five gobblers and a hen fed for some time on the golf course within sight of the house.

35. Mourning Dove (*Zenaidura macroura carolinensis*).

Only three were seen. If more land was cleared and under cultivation these birds would probably be numerous.

36 Ground Dove (*Chæmepelia passerina terrestris*).

Several were noted flying about or feeding by the roadside. They were not so tame as one usually finds them to be in the quiet streets of Florida towns.

37. Turkey Vulture (*Cathartes aura septentrionalis*).

Common. One pair had recently laid eggs in silo.

38. Black Vulture (*Catharista urubu*).

This species doubtless is much more common than the three individuals seen might lead one to suspect.

39. Marsh Hawk (*Circus hudsonius*).

One male seen beating along over the pasture May 3.

40. Red-tailed Hawk (*Buteo borealis borealis*).

One adult noted.

41. Florida Red-shouldered Hawk (*Buteo lineatus alleni*).

Three or four were flushed from their perches in the live oak trees.

42. Bald Eagle (*Haliætus leucocephalus leucocephalus*).

Eagles were seen on three or four occasions—all were adults with white heads and tails. Mr. Carnegie pointed out two of their nests. I understood that there were others on the Island.

43. Duck Hawk (*Falco peregrinus anatum*).

On May 4, while driving along the beach a few miles from Dungeness a Duck Hawk appeared coming from the direction of Fernandina up the bay. It was at the time flying perhaps a hundred feet above the water. Nearing the beach it suddenly dived at an Oyster-catcher we had been watching on the shore. The big shore-bird took refuge in flight, but the hawk almost immediately overtook it, but when within a few feet it swerved upward and towered. It quickly dived for another harmless attack, then pursued its way along the beach parallel with our course. At my suggestion Mr. Carnegie released the engine and the indicator showed a speed of forty miles an hour before we had attained a rate equal to that of the Duck Hawk. The bird, however, appeared to be moving with indolent ease and without haste.

44. Sparrow Hawk (*Falco sparverius sparverius*).

Only two were noted. C[illegible]itions on the Island would appear not to be favorable for their presence, the forest growth being too heavy and open ranges too few to meet their requirements.

45. Osprey (*Pandion haliaëtus carolinensis*).

One seen fishing in a pond May 2. Another seen on its nest near the duck house May 3 and 4.

46. Florida Barred Owl (*Strix varia alleni*).

Two seen and one heard.

47. Great Horned Owl (*Bubo virginianus virginianus*).

One seen May 3, and one heard calling the next night.

48. Yellow-billed Cuckoo (*Coccyzus americanus americanus*).

Several Cuckoos were found, but only one was examined at close range. This proved to be a Yellow-billed.

49. Belted Kingfisher (*Ceryle alcyon*).
A few were found. Not known to breed.

50. Southern Downy Woodpecker (*Dryobates pubescens pubescens*).
A familiar resident species.

51. Pileated Woodpecker (*Phlœotomus pileatus pileatus*).
Found at various places on the Island. Breeds.

52. Red-headed Woodpecker (*Melanerpes erythrocephalus*).
Only one was discovered.

53. Red-bellied Woodpecker (*Centurus carolinus*).
A fairly common resident bird.

54. Chuck-will's-widow (*Antrostomus carolinensis*).
Heard calling the early part of every night.

55. Nighthawk (*Chordeiles virginianus virginianus*).
Some were seen hawking about over the pasture late every afternoon. May 2 one was flushed from a single egg on the golf course.

56. Chimney Swift (*Chætura pelagica*).
These birds find congenial nesting places in the large chimneys.

57. Ruby-throated Hummingbird (*Archilochus colubris*).
Two males were seen.

58. Kingbird (*Tyrannus tyrannus*).
A very abundant species. No nests were noticed.

59. Crested Flycatcher (*Myiarchus crinitus*).
Very plentiful in the woods.

60. Wood Pewee (*Myiochanes virens*).
One seen on May 3.

61. Blue Jay (*Cyanocitta cristata cristata*).
Only three were noted. Is probably plentiful.

62. Fish Crow (*Corvus ossifragus*).
Abundant. This bird is the curse of the southern Heron rookeries. An egg shell containing a hole of the character made by a Crow was found on Long Slough. The egg was that of a Snowy Egret, Little Blue, or Louisiana Heron. As a rule the eggs of these species are indistinguishable.

63 Bobolink (*Dolichonyx oryzivorus*).
One small flock of male bobolinks observed on May 2.

64. Florida Red-wing (*Agelaius phœniceus floridanus*).
A familiar resident species.

65 Meadowlark (*Sturnella magna magna*).
Present, but not numerous.

66. Florida Grackle (*Quiscalus quiscula aglæus*).
Frequently seen. An incompleted nest was examined on May 2. It was being built in the hollow of a dead tree standing in a pond.

67. Boat-tailed Grackle (*Megaquiscalus major major*).
Present, and breeding.

68. Swamp Sparrow (*Melospiza georgiana*).
Two found near Ashley Pond, May 3.

69. White-eyed Towhee (*Pipilo erythrophthalmus alleni*).
Very plentiful; undoubtedly breeding.

70. Florida Cardinal (*Cardinalis cardinalis floridanus*).
Abundant and breeding.

71. Painted Bunting (*Passerina ciris*).
Five males and three females noted May 2-6.

72. Scarlet Tanager (*Piranga erythromelas*).
Two males appeared near the house May 2.

73. Summer Tanager (*Piranga rubra rubra*).
Common in the oak forests.

74. Barn Swallow (*Hirundo erythrogastra*).
Perhaps fifty were seen flying about the golf course and nearby field May 2, 3 and 5.

75. Tree Swallow (*Iridoprocne bicolor*).
Many were resting on dead trees in the upper end of a beach pond May 3.

76 Loggerhead Shrike (*Lanius ludovicianus ludovicianus*).
Watched an adult feeding a young on May 8. Two others were found.

77. Red-eyed Vireo (*Vircosylva olivacea*).
Seen on May 3, 4 and 5.

78. White-eyed Vireo (*Vireo griseus griseus*).
Seen and heard daily.

79. Black and White Warbler (*Mniotilta varia*).
In evidence daily.

80 Prothonotary Warbler (*Protonotaria citrea*).
A not uncommon species about the fresh water ponds.

81. Parula Warbler (*Compsothlypis americana americana*).
A few observed. Breeds.

82. Yellow Warbler (*Dendroica æstiva æstiva*).
These birds were frequenting the shrubbery near Mr. Carnegie's house and at Dungeness.

83. Magnolia Warbler (*Dendroica magnolia*).
Four males seen May 2.

84. Black-poll Warbler (*Dendroica striata*).
Two were found on the morning of May 2.

85. Pine Warbler (*Dendroica vigorsi*).
Several found in the pine woods. Males were in song.

86 Yellow Palm Warbler (*Dendroica palmarum hypochrysea*).
Noted in company with the Magnolia Warbler.

87. Oven-bird (*Seiurus aurocapillus*).
A numerous species, inhabiting the underbrush and thick woodlands.

88. Yellow-breasted Chat (*Icteria virens virens*).
Heard calling the night of May 2. None seen.

89. Mockingbird (*Mimus polyglottos*).
Abundant. Nests containing eggs were examined May 3 and 4.

90. Catbird (*Dumetella carolinensis*).
Often seen darting about the shrubbery.

91. Brown Thrasher (*Toxostoma rufum*).
Frequently noted as we rode about the Island.

92. Carolina Wren (*Thryothorus ludovicianus ludovicianus*).

Many in full song. A nest with young was shown me in the small club house near the golf course.

95. WORTHINGTON'S MARSH WREN (*Telmatodytes palustris griseus*).
Heard singing in the marshes daily.

94. BROWN-HEADED NUTHATCH (*Sitta pusilla*).
Only three observed. Probably common and breeding in the pine woods.

95. BLUE-GRAY GNATCATCHER (*Polioptila cærulea cærulea*).
Often seen and heard.

96. ROBIN (*Planesticus migratorius migratorius*).
Only one was seen. This was on the morning of May 6. Does not breed here.

97. BLUEBIRD (*Sialia sialis sialis*).
Common in the more open areas. One nest noted.

A MILD WINTER AND ITS EFFECTS ON THE MIGRATION OF BIRDS AT CHICAGO

C. W. G. EIFRIG
RIVER FOREST, ILLINOIS

The winter of 1920-21 was a memorable one for its mildness, not only for Chicago and vicinity, with which the writer is concerned, but for nearly the whole continent. Those members of the Wilson Club who attended the last meeting at Chicago will perhaps mentally put a question mark behind the statement, as regards Chicago at least, for they found the weather decidedly boreal during the last days of December, reaching —4° on the 28th, and plenty of snow too. But that was about the only real wintry spell we had. Lest anyone suspect the writer of undue meteorological enthusiasm or a too lively imagination along weather lines, let me quote from the official monthly summaries of the Chicago bureau. To go back as far as October 1920: "The mean temperature for the month, 61.9°, was the highest October mean recorded since the station was established in 1871. Mild weather was continuous from the 3rd to the 27th. Precipitation was about three-fifths of the normal. Sunshine was above the normal." "As a whole, November was mild with only light precipitation. The mean temperature, 40.20°, was 1° above normal." "In December moderate temperature prevailed throughout the first half of the month, etc. The maximum was 62° on the 3rd, the minimum was —4° on the 28th. No severe storms occurred, with the exception of a period extending from the 13th to the 15th." "January, as a whole, was mild and dry, with no severe storms. Aside from one moder-

ately cold period, 12th to 17th inclusive, every day was above the seasonable average in temperature, the excess ranging from 15° to 26° in nine days. The total precipitation, amounting to 0.97 inch was less than one-half, and the total snowfall, 3.2 inches, less than one-third of the normal. There was an unusually large amount of sunshine, 100 per cent of the possible amount being recorded on seven days." "In February mild, dry weather prevailed during most of the month. The mean temperature, 33.4°, was 8° above normal, and this was the sixth successive month with a mean temperature abnormally high. The absolute maximum of 66° on the 15th exceeds all previous February records. The small snowfall of the entire winter to February 28th, 9.4 inches, likewise breaks all previous records." "March, 1921, with a mean of 45.8°, exceeded all previous records with the single exception of 1910, while the maximum of 68° on the 5th is the highest ever recorded at Chicago so early in the season. Vegetation made rapid advancement until the 28th, when growth was checked by a freeze which injured tender plants." "April is the eighth consecutive month with abnormally high temperatures. However, unseasonably low temperatures prevailed on the 10th - 11th and 16th - 17th, with frosts and freezes, causing much damage to fruit and tender plants." Finally May: "As a whole May, 1921, was warm and dry. However, rather cool weather prevailed at the beginning and the middle of the month, with light frost on the 16th, followed by unseasonably high temperatures during the remainder of the month. The highest temperatures of record for so early in the season were registered on the 23rd and 24th. This is the ninth consecutive month with high mean temperature, the average daily excess from September 1, 1920, to May 31, 1921, being 6.6°. The total precipitation, 0.80 inch, was the least on record for May at Chicago." Accordingly, fall, winter, and spring were abnormally mild or warm, dry and lacking in the usual storms or gales which have earned for Chicago its well-known sobriquet "windy city." There was also more than the usual sunshine, but all this was interfered with in April and May by alternate unseasonably cool or cold and warm or hot weather, which then retarded the migration of some species, or otherwise interfered with it, broke it up more or less.

As a consequence of all this, one would expect large numbers of our hardy summer residents, such as Robin, Flicker, Killdeer,

Meadowlark and Blackbird, to remain in large numbers or even in numbers of large flocks in the case of some, or at least the successors of the same species from farther north. But that was not the case to any large extent, at least not in the immediate locality of the writer, River Forest, a western suburb of the metropolis. Or one would expect the hardy migrants such as Junco, Tree, Fox and White-throated Sparrows, also Brown Creeper, White-breasted Nuthatch and Chickadee to do so. But that again was not true to any striking degree. A few odd Flickers stayed in the neighborhood all winter, a few Creepers, too, which also happens other winters, and there were more Meadowlarks and Robins remaining all winter a few miles south than usual, but nothing striking. This would lend color to the theory of some that length of day is what prompts birds to leave or come, irrespective of temperature. At Ft. Wayne, Ind., however, I was told that Blackbirds of several species remained in large flocks all winter. In this vicinity, in Thatcher's woods, well known to people hereabout, a few Song Sparrows and Fox Sparrows lingered all winter, while Juncos and Tree Sparrows were slightly more in evidence than usually. The case of the Song Sparrow is a peculiar one. This species figured in more lists and more northerly ones in the Christmas bird census published in "Bird Lore" than ever before. Out of 78 lists from Canada, the New England states, New York, Michigan, Wisconsin and Minnesota, the Song Sparrow is given in 39, and from as far north as the Ottawa River, where the writer, during six years' residence, never found it in winter. On the other hand, in the same Thatcher's Woods there were hardly any Blue Jays in this mild winter, which usually stay there in some numbers. But a Black-crowned Night Heron was tempted to stay till January 4th at Beach, about 30 miles north of Chicago, also a Lincoln's Sparrow tarried there to December 26th. A pair of Bluebirds seems to have wintered in the Sand Dunes, as they were seen there January 22nd.

An unexpected occurrence was that of the Arctic Three-toed Woodpecker. The first ones were noted as early as October, despite the unseasonable warmth. About fifteen specimens were reported from the city and suburbs. The writer saw three on one day, November 26th, at Millers, Indiana.

However, what was the effect of the mildness of the season on the first spring migrants? That is what we want to get at. To get at this I drew out of my records the date of first arrival

for the following six species, who always announce their coming to the writer's home and its immediate vicinity in no uncertain tones:

Species	No. of Yrs.	First Arrival	Arrival in 1921
Meadowlark	9	March 13	February 14
Killdeer	7	March 13	March 2
Bluebird	6	March 4	February 16
Robin	8	March 6	February 5
Song Sparrow	9	March 9	February 20
Flicker	9	March 22	March 11

This makes the Meadowlark 27 days earlier than usual, the Killdeer 11 days, the Bluebird 16 days, the Robin 29 days, the Song Sparrow 17 days, and the Flicker 11 days, an average of 17 days. Of course, there is a factor of uncertainty as a margin of error entering into this, especially in the Robin and Song Sparrow, which in 1921 may have been some of those winter residents from a couple of miles south in our region. At any rate, the first migrants came notably earlier than usual. This must be put down to the influence of the mild season.

However, when we look at the winter range of these and similar species, as the Blackbirds, Sparrow Hawks, etc., we see at once that it does not mean much, because all these winter in the region immediately adjoining ours on the south, or at least between that and our Gulf coast. We can easily see how certain weather conditions obtaining in a relatively large area of the country can and probably do influence them in their movements. This has been shown over and over again by competent observers.

What about the spring migration of those species wintering in Central and South America? Is their coming influenced by weather conditions so near to their breeding grounds? Certainly not. This is also borne out by this year's records. While e.g. species of warblers, as the Myrtle and Palm, spending the winter in our Gulf states, also came unusually early, April 8th, in the case of the former, the warblers from South America came no earlier than usual, although one abnormality should be noted here, that of a Bay-breasted Warbler, which I saw April 30th, with some Black and White Warblers, not even Yellow Warblers being seen that day. The Kingbird, Bobolink, and Baltimore Oriole, due here about May 1st, were this year seen a week or more later, May 7th, in the case of the Bobolink, and May

13th for the Kingbird. This shows that when raw, cold or stormy weather prevails here in April or May, it will retard the migration of species having wintered in South America, but already landed on our Gulf coast in their northward migration, and the most important part of the migration, that of May, becomes normal again.

An unsuspected consequence of the mildness of the season was the shift of the breeding range of at least one southerly species northward. This is the Tufted Titmouse. It breeds commonly 30 miles to the south, and even at Riverside, five miles away. I had seen it once or twice in our woods, but only at the end of the winter, never later. This last winter about four pairs took possession of Thatcher's Woods and made it melodious at once. Later, in April, I saw them inspect knot holes in trees, and they remained, following the Cardinal, which has moved in within the last ten years.

July, 1921.

BIRDS SEEN AT THE MOUTH OF THE OHIO RIVER

BY GORDON WILSON

STATE NORMAL SCHOOL, BOWLING GREEN, KY.

For several years I have spent a week or more of my vacation, some time between July 27 and September 15, at Wickliffe, Kentucky, which is located near the junction of the Ohio and Mississippi Rivers and nearly opposite to Cairo, Illinois. Six miles above the town, which is located on the first bluffs below the mouth of the Ohio, stretches the great bottom. No levees have been built here and the bottom is still rather wild. Only a few hundred of the four or five thousand acres in this tract are in cultivation. The rest of the bottom is covered with open woods, marshes, and lakes. Some thirty-five lakes are of sufficient importance to have been named and there are many more which are almost or wholly dry late in the season. One of the most notable of these marshes is Swan Pond, some 500 acres in extent, which is covered with duck-weeds and water-lilies. Most of the lakes are bordered with tangles of elbow shrubs, while cypress knees and duck-weeds often extend far out into the water. After the fall rains set in, the bottom is almost inaccessible, but in the summer and fall it is a great pleasure ground. The ponds are still full of fish, for every winter they are restocked by the annual overflow of the rivers.

Squirrels, raccoons, and opossums keep fairly plentiful, in spite of a pretty general disregard of game laws.

About two miles above Wickliffe, in a bend of the Mississippi, there is a very extensive sandbar, which varies in size from year to year, but is usually about a mile long and half a mile wide. When the water is low this bar is a place dear to the bird lover, for the refuse from Cairo washed ashore here and the dead bodies of mussels attract many birds of rare beauty, some of which are not commonly seen, except on the Mississippi, in the interior of the United States.

Unfortunately, I have never had a spring vacation in this locality, nor have I been on hand to witness the real waves of fall migrants. Consequently, my list includes only the residents, most of the summer residents, and some of the earlier fall migrants. My records in the general period indicated above, cover the years 1915, 1916, 1917, 1918 and 1921. In 1915, 1917 and 1921 I camped for several days in the bottom, in the lake country. When not attending to camp duties I made long journeys to less-frequented ponds and marshes, often being paid for my pains by catching a good string of bream, crappies, and sunfish, and by seeing a new bird or two.

One of the most unfortunate things in bird study is that this section has never been studied exhaustively by ornithologists. Dr. L. O. Pinder, now of Versailles, Kentucky, made a valuable study of birds in Fulton County, thirty miles south of Wickliffe, and published the results in Auk in 1889. The two sections, however, differ considerably. I am hoping that this brief study will attract the attention of some experienced or amateur bird student in that locality, and that a few years hence a more exhaustive study may be made of the "big bottoms," especially as the projected drainage plans will materially change bird life there.

1. Herring Gull (*Larus argentatus*).

A flock of six or eight seen near the river, August 27, 1917.

2. Common Tern (*Sterna hirundo*).

A few seen in 1915, 1917 and 1918, 1917 being the best year. I found only one in 1921.

3. Black Tern (*Hydrochelidon nigra surinamensis*).

Seen commonly in 1915, 1917 and 1918, being most abundant along the sandbar in 1917. At Hickman, thirty miles south of the mouth of the Ohio, on September 9, 1917, I saw a very large flock just after a severe storm, flying low down over the gigantic waves.

4. Water Turkey or Anhinga (*Anhinga anhinga*).

Two which were thought to be of this species were seen on Long Pond August 28, 1917.

5. Wood Duck (*Aix sponsa*).

A common summer resident, especially abundant on Swan Pond.

6. Whistling Swan (*Olor columbianus*).

Locally known as "White Crane." Seen in 1917, 1918 and 1921, being especially abundant in 1917. I counted twelve in a single flock at the head of the sandbar in early September, 1917. Seldom have I, in many years of bird study, seen anything to compare with the beauty of the lakes, with their old cypresses standing in a clump of knees and duck-weeds and with two or three Whistling Swans perched on the gnarled and broken limbs.

7. Great Blue Heron (*Ardea herodias*).

Fairly common every year except 1915.

8. Little Blue Heron (*Florida cærula*).

One or two seen every year except 1921.

9. Green Heron (*Butorides virescens virescens*).

Not seen in 1915 and 1916, but fairly common the other years.

10. Black-crowned Night Heron. (*Nycticorax nycticorax nævius*).

One seen in 1917 among the lily-pads on Long Pond.

11. Sandhill Crane (*Grus mexicana*).

Fairly common in 1915; a few seen in 1916, 1917 and 1918. A very vivid picture in my mind is that of a Sandhill standing at full height and motionless on a drift at the lower end of a small wild lake, appropriately called Lost Pond.

12. Coot (*Fulica americana*).

A few seen in 1915 and 1917.

13. Woodcock (*Philohela minor*).

A flock of 6-10 seen on the sandbar, August 24, 1918.

14. Wilson's Snipe (*Gallingo delicata*).

A few seen on the sandbar in 1918.

15. Pectoral Sandpiper (*Pisobia maculata*).

Three or four seen on the sandbar, August 31, 1918.

16. Least Sandpiper (*Pisobia minutilla*).

A few seen on the sandbar in 1915.

17. Solitary Sandpiper (*Helodromas solitarius solitarius*).

Very common in 1918 and 1921, but not seen the other years.

18. Spotted Sandpiper (*Actitis macularia*).

A very few seen in 1918 and 1921.

19. Killdeer (*Oxyechus vociferus*).

Very common on the sandbar, but rarely seen in the bottoms.

20. Bob-white (*Colinus virginianus virginianus*).

Common in the cleared portions of the bottoms.

21. Mourning Dove (*Zenaidura macroura carolinensis*).

Common to abundant.

22. Turkey Vulture (*Cathartes aura septentrionalis*).

Common.

23. Black Vulture (*Catharista urubu*).

Very rare.

24. Marsh Hawk (*Circus hudsonius*).
One seen September 13, 1917; another September 4, 1918.
25. Sharp-shinned Hawk (*Accipiter velox*).
One or two seen each summer.
26. Cooper's Hawk (*Accipiter cooperi*).
Fairly common around the edges of the bluffs.
27. Red-tailed Hawk (*Buteo borealis borealis*).
One seen August 31, 1918.
28. Red-shouldered Hawk (*Buteo lineatus lineatus*).
A few seen every summer.
29. Sparrow Hawk (*Falco sparverius sparverius*).
Fairly common.
30. Short-eared Owl (*Asio flammeus*).
One seen in 1916; another August 30, 1917.
31. Barred Owl (*Strix varia varia*).
Common in the bottoms.
32. Screech Owl (*Otus asio asio*).
Fairly common.
33. Great Horned Owl (*Bubo virginianus virginianus*).
Common. The owl concerts of the wilder parts of the bottom are the richest I have ever heard, the Barred and Great Horned being the chief musicians.
34. Yellow-billed Cuckoo (*Coccyzus americanus americanus*).
Common. It sings in a very mournful manner all night long in the late summer.
35. Black-billed Cuckoo (*Coccyzus erythrophthalmus*).
A few seen in 1918.
36. Belted Kingfisher (*Ceryle alcyon*)
Especially abundant around the shallower ponds.
37. Hairy Woodpecker (*Dryobates villosus villosus*).
Common.
38. Southern Downy Woodpecker (*Dryobates pubescens pubescens*).
Common.
39. Yellow-bellied Sapsucker (*Sphyrapicus varius varius*).
One seen August 2, 1916; another August 29, 1917.
40. Pileated Woodpecker (*Phlœotomus pileatus pileatus*).
Fairly common.
41. Red-headed Woodpecker (*Melanerpes erythrocephalus*).
Common to abundant.
42. Red-bellied Woodpecker (*Centurus carolinus*).
Common.
43. Northern Flicker (*Colaptes auratus luteus*).
Common.
44. Chuck-will's-widow (*Antrostomus carolinensis*).
One heard July 30, 1917. My vacations have occurred usually too late for me to hear this bird and the Whippoorwill.
45. Nighthawk (*Chordeiles virginianus virginianus*).
Common.
46. Chimney Swift (*Chætura pelagica*).
Abundant.

47. Ruby-throated Hummingbird (*Archilochus colubris*).
Fairly common.

48. Kingbird (*Tyrannus tyrannus*).
Common to abundant.

49. Crested Flycatcher (*Myiarchus crinitus*).
Common.

50. Phœbe (*Sayornis phœbe*).
A few seen in 1915 and 1917.

51. Wood Pewee (*Myiochanes virens*).
Common.

52. Acadian Flycatcher (*Empidonax virescens*).
Common in the bottoms. I know of few bird-notes so stirring and "woodsy" as the call of this bird.

53. Blue Jay (*Cyanocitta cristata cristata*).
Common to abundant.

54. Crow (*Corvus brachyrhyncos brachyrhyncos*).
Common to abundant. I often found large flocks of Crows on the sand-bar, in company with Herons, Swans, and Sandpipers, feeding on dead mussels.

55. Cowbird (*Molothrus ater ater*).
Common.

56. Red-winged Blackbird (*Agelaius phœniceus phœniceus*).
A few seen in 1915. They are said to be very numerous in spring and common in the nesting season.

57. Meadowlark (*Sturnella magna magna*).
Common.

58. Orchard Oriole (*Icterus spurius*).
Fairly common. It was usually beginning to leave before my arrival.

59. Baltimore Oriole (*Icterus galbula*).
A few seen in 1915, 1917 and 1918.

60. Bronzed Grackle (*Quiscalus quiscula aeneus*).
Abundant.

61. Goldfinch (*Astragalinus tristis tristis*).
Common.

62. Lark Sparrow (*Chondestes grammacus grammacus*).
Seen in 1915 and 1917. It is said to nest there, as I know it does in Calloway county, seventy miles east of Wickliffe.

63. Chipping Sparrow (*Spizella passerina passerina*).
Common.

64. Field Sparrow (*Spizella pusilla pusilla*).
Common.

65. Towhee (*Pipilo erythrophthalmus erythrophthalmus*).
Rather rare.

66. Cardinal (*Cardinalis cardinalis cardinalis*).
Common to abundant.

67. Rose-breasted Grosbeak (*Zamelodia ludoviciana*).
One seen and heard near Prairie Lake, August 30, 1921.

68. Indigo Bunting (*Passerina cyanea*).
Common.

69. Dickcissel (*Spiza americana*).
A few seen in 1915 and 1917. They had usually migrated before my arrival.

70. Summer Tanager (*Piranga rubra rubra*).
Common.

71. Purple Martin (*Progne subis subis*).
Common.

72. Cliff Swallow (*Petrochelidon lunifrons lunifrons*).
Seen August 7, 1916.

73. Barn Swallow (*Hirundo erythrogastra*).
Seen in 1915, 1918 and 1921. Rare.

74. Bank Swallow (*Riparia riparia*).
Seen in 1915, 1917 and 1918.

75. Migrant Shrike (*Lanius ludovicianus migrans*).
Fairly common. On one day in 1918 I saw more of this species than I usually see in a whole season in my regular territory.

76. Red-eyed Vireo (*Vireosylva olivacea*).
Fairly common.

77. Yellow-throated Vireo (*Lanivireo flavifrons*).
Fairly common in the deep woods.

78. White-eyed Vireo (*Vireo griseus griseus*).
Common every year except 1921.

79. Black and White Warbler (*Mniotilta varia*).
Fairly common.

80. Prothonotary Warbler (*Protonotaria citrea*).
Common around the wilder lakes.

81. Yellow Warbler (*Dendroica æstiva æstiva*).
Seen only in 1915 and 1916. It is said to be a common summer resident.

82. Myrtle Warbler (*Dendroica coronata*).
A few seen September 9-12, 1917.

83. Black-throated Green Warbler (*Dendroica virens*).
A few seen in 1918.

84. Louisiana Water-Thrush (*Seiurus motacilla*).
Seen only in the years 1917 and 1921. In the latter year it was very common around the edges of half-dried ponds and sloughs.

85. Kentucky Warbler (*Oporonis formosus*).
One in fine plumage seen August 23, 1918.

86. Maryland Yellow-throat (*Geothlypis trichas trichas*).
Seen commonly every year but 1921.

87. Yellow-breasted Chat (*Icteria virens virens*).
Fairly common in 1915 and 1917.

88. Redstart (*Setophaga ruticilla*).
Seen in 1916, 1917 and 1921, being especially plentiful in 1921.

89. Mockingbird (*Mimus polyglottos polyglottos*).
Common.

90. Catbird (*Dumetella carolinensis*).
Common every year but 1921.

91. Brown Thrasher (*Toxostoma rufum*).
Seen only in 1915 and 1917.

92. Carolina Wren (*Thryothorus ludivicianus ludivicianus*).
Common.

93. Bewick Wren (*Thyomanes bewicki bewicki*).
Common.

94. White-breasted Nuthatch (*Sitta carolinensis carolinensis*).
Common.

95. Tufted Titmouse (*Bacolophus bicolor*).
Common to abundant.

96. Carolina Chickadee (*Penthestes carolinensis carolinensis*).
Common to abundant.

97. Blue-gray Gnatcatcher (*Polioptila cærulea cærulea*).
Common.

98. Wood Thrush (*Hylochichla mustelina*).
Common. Nothing added more to the grandeur of early dawn and twilight than the rich, gurgling melody of this justly-celebrated songster.

99. Robin (*Planesticus migratorius migratorius*).
Common, and becoming steadily more abundant.

100. Bluebird (*Sialia sialis sialis*).
Common.

THE PRAIRIE CHICKEN IN EAST CENTRAL IOWA

BY FRED J. PIERCE
WINTHROP, BUCHANAN COUNTY, IOWA

Indirectly, the advance of civilization has made many alterations in the lives of America's birds, and, in infrequent cases, it has spelled their doom. The coming of the white man into theretofore undeveloped country made a great many changes to which a great many birds could not readily adapt themselves. He cut down the forests, drained the wet lands, turned vast stretches of virgin prairie land into fields of food for himself, and built cities in what was formerly the great domain of nature's children. Some of the birds retreated farther into the wild as man advanced; others less timid returned his friendship and came close to his dwellings to rear their young; and a few, of their own volition, accepted his structures as superior to their own and thenceforth called them their homes. Unfortunately, a few, by reason of the excellent food their bodies contained, were dealt severe and long continued persecution,—to such extent that they were nearly, if not completely, wiped off the face of the earth.

In this paper the writer wishes to present some of the scattered notes he has gathered on the (Iowa) Prairie Chicken of yesterday and today. This now protected Iowa game bird was for many years a very common species, but, because of the great

amount of persecution it has undergone, it has at last been put on the shelf as a game bird, and is now accorded the protection it has so long deserved. The present Iowa legislation has been doing and will do a vast amount of good toward its increase. The first five-year ban (ending 1922) on shooting Prairie Chickens has been followed by a second five-year closed shooting period, and it is to be hoped that this term may be again extended.

In an early day, Iowa's vast prairies stretched away on every side. The long, waving prairie grass formed the Prairie Chickens' natural home, and here they made their nests and reared their little ones, quite unmolested by hand of man. Of course, prairie fires were an inevitable danger, but these did not seem to be frequent enough to seriously affect their growth and prosperity. If man had not interfered, their existence would yet be envied. An ideal climate, an abundance of food, natural enemies not overwhelming,—what more could be desired? In the winter, too, they were able to cope with the weather. The long and very severe winters did not hold terrors for them, for when their summer home—the dense, heavy grass—became snow covered, they often burrowed under it and converted the matted growth into a snug retreat for the night. Some of these tunnels would reach a distance of ten feet. Thus housed and protected, what did the wise Prairie Chicken care if it was "blizzing" outside and the mercury did go down to forty below? The next morning he came out to feed on weed seeds and whatever else nature had provided for him. A sleet storm, though, must have presented some serious difficulties to this "snow bird."

I am greatly indebted to Mr. Julius Gates, one of my neighbors, who has given me a great deal of valuable information regarding the Prairie Chickens' past abundance and the methods by which they were destroyed. Mr. Gates immigrated to this country in 1869, during a period when Prairie Chickens were trapped and marketed in immense quantities, and has for a half century been associated with this bird in the farming regions near Winthrop.

Trapping Prairie Chickens in Iowa seemed to reach the zenith some time in the seventies. Every one in the country was apparently interested in trapping and marketing these noble birds. Nearly every farmer had an abundance of spare time during the winter months and was anxious to turn his

vacant hours into dollars, so without thought or care of the scarcity this practice would eventually bring in the Prairie Chickens' ranks, he constructed a number of traps and nonchalantly set about hastening their destruction. The sons were as enthusiastic over this easy method of securing money as their father. The trapping industry was current gossip everywhere. "Well, how many 'chickens' did you get today?" was the stock question.

The traps used were very simple in working principle, but a good deal of time was required to make a successful trap. A large box made of laths, wider at the bottom than at top, constituted the trap. The box was about two feet high, two or more feet wide, and as long as a lath. A balanced door or "gangplank," which dropped the victims into the trap, filled a square hole in the top; the door was made of a shingle. Across the center of the box or coop a board was nailed to make it stronger, and in this holes were bored to receive sharpened sticks. Ears of corn were placed on these for bait. The corn seldom failed to induce the birds to hop upon the trap (or run up on poles leaned against it for this purpose) and step on the door in their attempt to reach the corn. The door dropped them inside. It was weighted with a stick of wood on the outer end so that it always came back automatically to its original position, where it was ready for another cargo. The vertical laths which formed the sides extended above the top and were sharpened on the ends to prevent the birds from approaching the bait from any place except at the opening in front of the door. A rough enclosure (with one end open) made of tall willow poles or brush usually surrounded the trap. In the fall buckwheat was frequently sown in these selected spots so that the place would have a strong attraction when trapping operations began. Some ambitious trap owners made traps with two doors and had their birds going in from two sides. The traps were usually tested with domestic chickens before they were taken out. If properly constructed, the trap would be full of chickens in a very short time; if not, it was not worth taking out.

A short time after the trap was set, a flock of Prairie Chickens would be seen flying toward it, and, upon sighting the corn bait, a few would venture in. These acted as decoys and soon a steady stream would be going in. Occasionally a bird would fathom the purpose of the trap and, catching himself, would

fly back; but usually the birds were totally ignorant of the trap's object.

The trapper was happy when he peered in and saw the trap filled with birds. Many of them had become frightened, and in trying to escape had run around inside the trap and so injured their necks and wings that they were bleeding profusely. Now came the exciting part, for the birds were hard to catch and hold. They had an unbelievable amount of strength in their wings and many would fly out of a man's clutch in spite of his best efforts to hold them.

After the birds were killed, the necks were broken and folded under the wing; in this position (they were not dressed) they were frozen and then compactly placed in barrels, ready for shipping. They brought twenty-five cents each on the market, and a limited amount was also taken by local hotels at this price. Mr. Gates says that one winter his brother and he got fifty birds. Some neighbor boys trapped twenty-four in one day, he says. The young and old birds looked so much alike that it was next to impossible to distinguish them by appearance. A common way to tell was to hold them up by the bill and bend the head up or down. If the bill was flexible, it was a young bird; if stiff, an adult.

After the nefarious practice of trapping had gone on for some years, laws were passed to prohibit it, but, I am told, quite a number were still set away from roads in unfrequented places; however, these eventually passed out of existence.

Only a fair conception of the great numbers of Prairie Chickens which were once found here is gained by the statements of old residents. Mr. Gates says in the early morning they would often come in great flocks to the trees along Buffalo Creek and indulge in characteristic music, which he terms "cackling." * He says the trees would be loaded down:—"hundreds and hundreds of them, and oh! *how* they *would* cackle!" Every tree in the preferred district would be full of the birds, and he has often been at a loss to understand how the trees withstood the great weight. After leaving the trees they went to the fields and breakfasted on weed seeds, corn and other grains if they were to be had. They used to come around the farm buildings in the early hours of morning; the farmer could often shoot them off his barn roofs with very little difficulty.

* See *Oölogist*, April, 1921, page 40 (Vol. 38, No. 4).

Gunning had a great deal to do with their decrease. A bird so plentiful and so easily secured was sure to receive a great amount of attention from shooters. Farmers, town folks, all, young and old, were hunting them continually. A Buchanan County newspaper of December 22, 1863,* tells of the enormous amount of Prairie Chickens which were coming into Independence, the county seat. One man sold $350 worth in a day, and sales of $50 to $100 were of frequent occurrence, while it was not unusual to see three and four wagonloads of Prairie Chickens, Quail and Pheasants (together) on the streets in one day. The shipping of Prairie Chickens had assumed great proportions and some of the stores were piled high, preparatory to shipping east. It does not state how these birds were killed, but I infer they were both trapped and hunted. Another issue of the newspaper states that the county's best shooter had bagged 157 in a day with 150 shots. Still another note tells of four hunters who left Independence at 3:00 p. m. one day, drove fifteen miles and returned the next evening with 337 Prairie Chickens. This was certainly a record for thirteen hours or less. Great Prairie Chicken hunts, attended by many people, were frequently staged. Boys often kicked out the snow burrows and killed the helpless birds when they came to where they were sitting in the snow. This the boys considered great sport.

Reports of farmers lead to the belief that the barbed-wire fence has been responsible for the death of countless Prairie Chickens. These birds fly very low in their short flights about the fields and, I am told, hundreds of times they were victims of the wires. Farmers say they have often seen the bodies of the impaled birds hanging on the fences. Probably many other low-flying birds meet death in a similar manner.

Investigation of statements also shows that intentional prairie fires had an *enormous* effect on their decline in abundance. It was a common practice with farmers to burn off the prairies in the spring to remove the dead top grass. Unfortunately, this was habitually done when the prairies were covered with nests of the Prairie Chicken, and untold numbers of nests and even young were mercilessly destroyed in this way. After the fires had passed over these tracts, eggs were gathered up by the bushel. The fresh eggs that had been cooked in the

* Quoted in *History of Buchanan County, Iowa, and Its People*, by Harry C. and Katharyn J. Chappell, two vols., Chicago, 1914.

fire were eaten at once, while the others were sorted and the fresh ones used later for the table. It was small wonder that this species could not regain its slipping foothold on life when its nests and young were destroyed in this cruel and wholesale manner.

When the fields of timothy hay began to supplant the prairies, the Prairie Chicken accepted them as nesting places, but here too they met with misfortune, for the mowing machine destroyed all the nests and young to be found at that season. When the hay was raked up, too, it was not unusual to find the mangled body of a mother bird who would not forsake her treasures when the mower came along making its "cutting remarks."

My friend, Mr. Gates, tells of many interesting characteristics of the Prairie Chicken, which he has observed during his sojourn in this region. They were looked upon as reliable weather prophets by farmers in frequent instances. Also when they indulged in their spring fighting and mating antics, the farmer knew that he would soon be working in his fields. The important-feeling males would go to a knoll or rise in the ground (the highest spot to be found always) to fight and boom, early morning being the preferred time. When two cocks found themselves facing each other, they invariably sprang into the air and flew at each other at full speed; when they crashed together they were usually about three feet from the ground. The Prairie Chicken's "*boom*" is certainly a wonderful sound on a fine spring morning, and once heard it is never to be forgotten; the bird is seldom thought of without the deep resounding boom coming to mind.

My father tells of a Prairie Hen which nested in a slough beside a cornfield, the nest being just at the end of a corn row. When plowing the corn in this particular row, it was necessary for the team to pass over the nest, one horse on each side of it. The brave bird did not leave the nest until the horses were directly over her. They were of course frightened when she burst out between their legs, but the eggs hatched safely. Horses often stepped on the birds when they refused to desert their nests. I know of two boys who set some Prairie Chicken eggs under a domestic hen. They awaited the developments with considerable interest, but when the little ones became two days old they all disappeared — "nature had reclaimed her own."

The first quarter of the Twentieth Century will soon be finished. On every hand the Prairie Chicken is becoming in evidence and bids fair to again become the plentiful game bird it once was. We who love the Prairie Chicken as a resident of our beautiful Iowa farm lands, rather than for the amount of meat its body contains, dislike to think of the time when it will once more have to stand up before the firing squad. The automatic shotgun, the small edition of the deadly machine gun, is becoming all too popular among so-called "sportsmen." Its manufacture ought to be prohibited. Covies of from ten to fifty of the birds are common in many regions. Frequent mention of their increase is found in the local presses. Where formerly we found none, we now see them rather regularly, and if present indications are at all prophetic, we shall have large numbers of them with us in the future. Time alone will tell whether this species can wholly adapt itself to the greatly changed conditions it now finds in its old haunts.

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THE WILSON BULLETIN

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EDITORIAL

Dr. Cole's history of the Bird Banding movement in this country is especially appropriate at this time of expansion of the work. It was through his efforts and continued interest and sacrifice that the work was kept sufficiently before ornithologists so that the value of it as a method in bird study was finally recognized. The revival of the work in a new form, that which we are pushing now, is, of course, due to the work of S. Prentiss Baldwin, with his systematic trapping and banding. May the good work go on.

The Editor has always been interested in the parasitic habits of the Cowbird, and has kept a more or less accurate record of the number of eggs found in the nests of various species. Never has he found such a large percentage of parasitized nests as the present season. Two examples will serve to illustrate the situation. A nest of the Red-eyed Vireo was found with three eggs of the Cowbird and none of the vireo; the three were as much alike as could well be. A nest of Towhee contained two of the Towhee and six of the Cowbird. In point or resemblance the six were in three pairs. Parasite eggs are always removed.

We earnestly commend the making of "Bird Counts" which the U. S. Biological Survey is sponsoring and urging. It is only from data obtained from many such counts well scattered over the country, and made as accurately as possible, that we shall be able to follow changes that may be going on among the birds of the country. It is altogether likely that there have been and continue to be shifts of bird population of great significance to human interests due to shifts of human interests themselves. We may continue to speculate about these shifts, as we have in the past, but with the data in hand that these "Counts" are bringing to us, speculation will largely give place to known facts. Join the ranks and make at least one such "Count" this summer.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

THE EARLY HISTORY OF BIRD BANDING IN AMERICA

LEON J. COLE, DEPARTMENT OF GENETICS,
UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN

There has recently been a great revival and extension of interest in bird banding in this country, and I presume it is because of this that I have been asked to prepare a brief account of the early efforts along this line. Since the chief outlines of this history have already been published on several occasions[1] there would be no object in repeating them. There is, however, a more intimate and personal history connected with the early endeavors to establish bird banding as a systematic method of bird study which may not be without interest to the considerable numbers who are interested in the undertaking at this time, even though it may not add anything essential to what has already been written. This is my excuse, therefore, if the present account appears to be more a personal narrative of some of the early struggles, discouragements and successes than a connected history of the bird-banding movement in this country. For the same reason, I shall not consider the independent development of the study of birds by this method in several European countries. This is essentially an account of the beginnings and early days of the American Bird Banding Association, the functions of which have lately been so happily taken over and are being so effectively prosecuted by the Bureau of Biological Survey.

Sporadic attempts to mark birds in one way or another, in order to determine whether they returned to the localities in which they were originally marked, have undoubtedly long been made. We know that Audubon made one such successful experiment, and game birds particularly have occasionally been banded or tagged in some way by individual hunters or by sporting clubs. Such efforts were, however, usually purely local in their scope, the marks affording no means of identification to anyone except those who did the banding, and hence yielded no "returns" unless the birds chanced to be recaptured in the localities in which they were marked. The first systematic attempts in this country, so far as I know, to secure wider coöperation by having a return address on the bands, were those of Mr. Taverner, then at Detroit, and of Dr. Bartsch at Washington. Although both of these ornithologists worked on a relatively small scale and for a limited period, they secured results sufficient to demonstrate the value of the method.

[1] Cole, L. J., The tagging of wild birds as a means of studying their movements, *Auk*, Vol. XXVI, 1909, pp. 137-143; Cole, L. J., The tagging of wild birds: Reports of progress in 1909, *Auk*, Vol. XXVII, 1910, pp. 153-168; Cleaves, H. H., What the American Bird Banding Association has accomplished during 1912, *Auk*, Vol. XXX, 1913, pp. 248-261; Lincoln, F. C., The history and purposes of bird banding, *Auk*, Vol. XXXVIII, 1921, pp. 217-228.

My own interest in bird-banding grew independently out of my lifelong interest in birds and in the problems of migration. I had the method in mind as early as 1901[2] and the results of Prof. F. H. Herrick, obtained in his study of the distribution of the lobster on our Atlantic seaboard by means of tagged specimens, convinced me of the practicability of the method for birds. In 1902, in connection with a study of the German carp which I was making for the United States Fish Commission, I tagged a small number of these fish in order to determine their movements and distribution, but the work was not continued and was on too small a scale to produce results. I became determined, however, to try the method out on birds at the first opportunity.

Such opportunity did not offer until the winter of 1907-8, when I broached the subject to the New Haven Bird Club, a small but enthusiastic group of bird students interested primarily in local field work. The proposition was received cordially and a committee, consisting of Dr. Louis B. Bishop, Mr. Clifford H. Pangburn, and myself, as chairman, was appointed to put the plan into operation. This plan contemplated at that time only local efforts. It involved securing a supply of bands and their distribution to members of the club, who should carry them with them on their field trips, and use them whenever opportunity offered, principally on nestlings. The banding, however, was rather incidental, the chief interest of the field workers being along other lines, and the number of birds banded in 1908 proved to be disappointingly small. I was, however, more than ever convinced of the value of the method, and felt particularly that if the interest and coöperation of the large number of amateur bird students in the country could be secured in the work it would gradually build up an accumulation of accurate data on bird movements which would be of the greatest scientific value. During the season I discussed the matter particularly with Dr. Bishop and with Dr. Glover M. Allen of Cambridge, and corresponded with a number of other ornithologists. It was in these discussions that the plan developed of gradually extending the work to national scope, but for the time it seemed best to keep it under the auspices of the New Haven Bird Club. The committee, however, asked and received permission to expand its powers, and the whole work, was, in fact, placed unrestrictedly in its hands. It is my recollection that during the first year the Club had contributed something towards the modest financial support of the work, but it was now determined to depend for financial assistance entirely on voluntary subscriptions.

The expanded program increased greatly the burden of correspondence, the difficulties of securing bands and of obtaining funds to meet necessary expenses. The correspondence and keeping of the records fell entirely to myself and had to be conducted without clerical assistance, except a necessary minimum now and then when a form letter was to be sent out. This grew to be a considerable burden, especially as it had to be done in addition to my regular duties as instructor in the Sheffield Scientific School. Obtainng suitable bands and in sufficient quantity was then as it always has been, a serious problem. In the early days we se-

[2] Cole, L. J., Suggestions for a method of studying the migrations of birds. 3rd Rept. Mich. Acad. Sci., 1901, pp. 67-70. 1902.

cured blank aluminum, either in tubes which were cut into the desired lengths for the "closed" bands, or in sheets which were cut up for "open" bands, and the stamping was done in part by ourselves, and in part by a janitor at so much per hour for his labor. Financial assistance came from a number of sources of which I do not at present have the record, but we were always sailing very close to the wind and more than once were almost on the rocks. On such occasions, I usually turned to Dr. Bishop, and it was largely owing to his unfailing response in times of need that we were able to keep the work going in these early years.

The plans for 1909 met a cordial response from a considerable number of ornithologists. The records now in my possession are incomplete and in attempting to give a list of even those collaborators who took a most active interest I am doubtless omitting a number whose names should be mentioned. A partial list, taken at random, includes: T. C. Stephens, Sioux City, Iowa; Harry S. Hathaway, Providence, R. I.; Ernest Harold Baynes, Meriden, N. H..; Alfred C. Redfield, Havenford, Pa.; B. S. Bowdish, Demarest, N. J.; Alfred O. Gross, then at Harvard University; Lynds Jones, Oberlin, Ohio; Ora W. Knight, Bangor, Me.; Charles W. Miller, Shawnee-on-Delaware, Pa.; Arthur H. Norton, Portland, Me.; Leonard S. Pearson, Wayne, Pa.; R. M. Strong, Chicago, Ill.; A. A. Saunders, Anaconda, Mont.; S. A. Courtis, Detroit, Mich.; Roy Thompson, Cando, N. D.; William L. Findley, Milwaukee, Ore. While this list undoubtedly has glaring omissions, it will at least serve to indicate to what extent the work in this season took on more than a local character.

The results obtained in 1909 were also much more encouraging. As these were reported in some detail in the *Auk*,[3] there will be no need to repeat them here. Something over a thousand birds were banded during the season and a fair number of "returns" was obtained the same year. The most interesting of these in many respects were the results from banding done by Redfield and Pearson in a colony of Black-crowned Night Herons at Barnstable, Mass. Of nearly 200 young birds banded seven "returns" came in during August and September of the same year. Some of the letters announcing the finding of these birds were of more than scientific interest, and I cannot refrain from mentioning two of them in particular. The first was decidedly apologetic, and ran as follows:

"Gentlem dear sirs Your bird was shot here to day by me Albert Bailey for which I was more than Sorry when I found it had a ring on. I took it for a Hawk as It flew several times over my yard as I thought after chickens and Gentlemen all I can say that I am sorry If I did wrong In so doing and also beg Pardon.

"Yours with Rees

"Albert Bailey."

The other letter, from A. R. Graham & Son, Berkeley Hills Trout Farm, Berkeley, Mass., was in quite a different tone. It read:

"Gentlemen: The bearer of the enclosed [band] was found in one of our traps yesterday morning. Now will you please tell us if you are

[3] Vol. XXVII, 1910, pp. 153-168.

raising these pests or did you simply capture and tag it to see how far it would migrate?"

Inquiry elicited the information that owing to the depradations of Kingfishers, "Hawks" and Herons on their fish steel traps were set on the tops of posts near the pond, where the birds would alight. Concerning the capture of our banded specimen, it was added:

"As he hung suspended he was obliged to 'throw up' his catch before he could quack and the same was three trout and two pickrel all about 5 inches long. We catch and shoot about 40 of this family of birds every year and consider we have saved about $5.00 of trout per bird destroyed."

Bird-banding not only has its romance, but it seems to stimulate the imagination. Mr. Finley banded a wren in Oregon and it was later found dead in a watering trough in the same state. A newspaper reported the finding, with a headline announcing that Wren Crosses Continent, since it had on its leg a band bearing the inscription, "The Auk, New York, 3429."

It became evident during the year that some more definite organization was necessary to carry on the expanded work, and this necessity grew into the idea of forming a national society for this purpose. At the meeting of the American Ornithologists' Union in New York City in November, 1910, I presented a report of the season's work and emphasized the need of a permanent organization. At the dinner, held at the Hotel Endicott on the evening of November 8, a paper was circulated calling for the signatures of those who desired to become charter members of such an organization. As a matter of historical interest it may be worth while to reproduce the list here. It includes the following names: G. J. Carpenter, B. S. Bowdish, George P. Ellis, W. DeW. Miller, L. A. Fuertes, T. Gilbert Pearson, Leon J. Cole, Thos. S. Roberts, Ruthven Deane, Witmer Stone, George Spencer Morris, John H. Gage, Charles F. Batchelder, James Savage, C. J. Pennock, Bruce Horsfall, Arthur H. Helme, J. A. Weber, A. C. Bent, Frederic H. Kennard, Dwight Franklin, J. T. Nichols, E. H. Forbush, J. Dwight, Jr., Louis B. Bishop, Lynds Jones, Chas. W. Miller, Edw. J. F. Marx, Francis Harper, Arthur A. Allen. To this list were added the following whose names were put down by request: Glover M. Allen, C. H. Pangburn, A. A. Saunders and Samuel Wright.

Following the dinner there was a meeting to perfect organization and a committee drew up articles of association, which were duly approved.[1] Thus came into being the American Bird Banding Association. At the first meeting the following officers were elected: *President*, L. J. Cole; *Secretary-Treasurer*, C. J. Pennock; *additional members of the Executive Committee*, Louis B. Bishop, Glover M. Allen and Thos. S. Roberts.

The progress of the work was interrupted to some extent by my change in April, 1910, from New Haven to take up my present position at the University of Wisconsin. Furthermore, the duties of my position occupied so much time and were so foreign to the bird-banding, that I felt I must drop the active direction of this as soon as some one could be found to take it up. I carried it on as best I could, however, till April,

[1] *The Auk*, Vol. XXVIII, 1910, p. 167.

1911, when it became imperative that we should make some other provision, as I was leaving for Europe the following month, to be gone all summer. I took the matter up with several interested persons and as a consequence received a generous offer from Mr. Ernest Harold Baynes, on behalf of the Meriden (N. H.) Bird Club, to take over the direction of the work and to raise the necessary funds; and at the same time a telegram from the Linnæan Society of New York City, stating that that society had appointed a committee to assume the responsibilities of the bird banding if desired. It was necessary for me to leave the decision in the hands of the Executive Committee, and it seemed best to them, because of location and for other reasons, to accept the offer of the Linnæan Society. This offer was made largely through the interest and efforts of Mr. W. W. Grant, and it is indeed due in great measure to his generous assistance at this time that the work was prevented from coming to a standstill. The name and membership of the American Bird Banding Association were continued, but the income was greatly supplemented by assistance from the Linnæan Society and by private subscriptions obtained through the energetic efforts of Mr. Grant and of the new secretary, Mr. Howard H. Cleaves. At this point, then, my active participation in the Association ceased, and the history beyond that time is not mine to write. I may merely add a word to round out the story. Comparatively little had been accomplished in 1910, and owing to the lateness of the season when the transfer was made, and the difficulties encountered in procuring a supply of bands, the same was true for 1911. Thereafter the work was actively pushed under the direction of Mr. Cleaves until, along with many other non-essential activities, it suffered another reverse during the war.

The credit for the recent great revival of interest in bird-banding belongs to Mr. S. Prentiss Baldwin of Cleveland, for he first amply demonstrated the superiority of trapping birds for banding purposes over the haphazard banding of nestlings. The use of traps had appealed to us in the earlier stages of the work and I discussed the matter fully with Mr. Charles W. Miller, who was at that time director of the Worthington Society for the Study of Bird Life, at Shawnee-on-Delaware, Pa. Mr. Miller wrote under date of May 10, 1909: "The method of trapping certain birds, tagging them and letting them go, and thus possibly trapping them again next season, it seems to me, is a very feasible plan and one in which I should be glad to coöperate with your committee in any way that I might be able." Four days later he reported that he had trapped and banded eight Orioles and one Song Sparrow, and by the end of the season the list was of considerable size. The Orioles particularly were "repeaters," and were often trapped several times in a day. On May 9, 1910, Mr. Miller wrote: "The first of last years' banded birds reported this afternoon in the shape of an adult male Baltimore Oriole, No. 3250. Banded May 15, '09, and retrapped three times on the 17th of the same month"; and he adds, "I should have liked to have been a speck on that band! What interesting things could be reported."

Arrangements were also made with Mr. C. W. Beebe for extensive trapping operations at the New York Zoölogical Park, but these were interrupted by the departure of Mr. Beebe on one of his extensive expeditions.

It was Mr. Baldwin, however, who really demonstrated the possibilities of the trapping method combined with banding, and one pregnant paragraph in his fascinating report[5] emphasizes the new field opened up

"While this report includes only the 'Returns' of birds taken from one year to another, it is evident that not less important, to a person who operates traps at the same place all of a season, or all of a year, is the opportunity, by this method, of keeping in touch with the daily life of birds living in the vicinity; of knowing just when they come; just when young leave the nest; just how long they remain in the vicinity; and when they leave; and watching the exact movements of individual birds during migration. Indeed, the careful observer, in a fixed location, may obtain facts of greater scientific value on the daily records than from year to year."

The remaining history of bird-banding in this country is recent history, and is still in the making. In 1920 the work of the American Bird Banding Association was taken over by the U. S. Bureau of Biological Survey, and the Association, after a life of intermittent activity extending over a period of ten years, came to an end. While it did not accomplish all it might have, it nevertheless played its part as a pioneer in bringing to the attention of ornithologists, and to the public to a limited extent, the value and possibilities of bird-banding; and it fostered the movement until the time was ripe for it to be taken over by an agency with facilities for its proper supervision and advancement. Those of us who have watched and helped in its growth may congratulate ourselves that it is now in such good hands, particularly under the able and enthusiastic guidance of Dr. Oberholser and Mr. Lincoln.[6]

In closing, I cannot forego a word as to the future, which certainly holds out bright prospects for results from bird banding. A host of volunteer trappers and banders is taking up the work; local associations, such as the New England Bird Banding Association, are being formed; and results of the greatest value and interest are sure to accrue. I think it is safe to predict that these results will not only be of theoretical interest, but that much of practical importance will come out of them as well. The Biological Survey is already stressing the importance of the work in relation to the administration of the Migratory Bird Act, and many other practical applications are sure to follow. In general the results will be of two kinds; those relating to the larger migratory movements, and those pertainng to more local life-history studies. In the first of these a large series of banding stations, strategically located, is of the utmost importance; for the second, in order to obtain the highest type of results, it is necessary that much of this work be done by thoroughly trained experimenters. In both cases it is important that the stations have a greater permanency than can be assured on the basis of purely voluntary coöperation. I would in no way belittle the value of the services of the independent individual observer; but I look forward to

[5] Baldwin, S. Prentiss, Bird-banding by means of systematic trapping. *Proc. Linn. Soc. N. Y.*, No. 31, 1919, pp. 23-56.
for bird study. This paragraph is well worth quoting:

[6] See Lincoln, F. C., Instructions for bird banding. *U. S. Dept. Agr., Circ. 170*, 1921; also *Auk*, Vol. XXXVIII, 1921, pp. 217-228.

the time when we shall have a series of permanent stations either under the direct supervision of the Bureau of Biological Survey, or perhaps better, connected with our Agricultural Experiment Stations, Agricultural Colleges, Universities, or other institutions of learning, and coöperating with the Bureau. Such stations should have enough of a permanent organization and staff to insure a continuous regular routine of trapping and banding of migrants, and they could in addition undertake the study of such local problems as seemed desirable. Such a system of definitely located stations would in a way be comparable with the distribution of local weather bureaus and would serve a similar purpose, that is, they would form a network of outposts for the accumulation of records. If there were a station at each of the Agricultural Colleges and Universities, to say nothing of smaller colleges, in a great migration route like the Mississippi Valley, they could not fail in a number of years to accumulate information of the greatest significance in the study of migration. I may add that steps are being taken looking toward the foundation of a bird-banding station at the University of Wisconsin, and if this effort is successful it is to be hoped that this may be merely the first of a large number of similar stations.

The great advances in scientific knowledge have for the most part followed the development of some new method of delving into Nature's secrets. Bird-banding as a method of bird study is in its infancy and we may confidently look for significant results from its further application.

FLAT TRAPS

When the birds begin to sit on their eggs the trappers must be very careful or they will cause the loss of many sets of eggs by keeping the old birds away from the nest too long. This was the reason for making the flat or box shaped traps at Waukegan, Ill.

The sparrow type trap is only used nights and mornings. When you arrive home just close the doors, put in fresh feed, and you are ready for the evening's trapping; but be sure to make the rounds the last thing before dark to make sure that no birds are left in over night, as a cold rain or rats or owls may prove to be fatal before morning.

After the morning's trapping is over, open the doors of all the Government sparrow type traps so the birds may go in to feed and get out again. They soon loose fear and eventually you will catch them, but the flat trap seems to be far better at such times, for the birds will go under to feed without the fear that they show in entering a small opening; then there are no doors to close as they are always ready,—just pull the string. If you fail to go home some evening then there is no worry about the birds that you are responsible for being locked in a cage, which spoils your evening or makes you hurry home to release them.

The first ones were made with sides of four-inch boards one inch thick, but they were too heavy; then wire frames were made and covered with netting, but they were also heavy; finally, with aid of an expert metal worker, who is now making them for sale, a neat trap was made with folded seams and a smooth door, leaving no rough edges and sharp

points to scratch your hands and the birds. These are rigid and strong, and if they are bent out of shape they can easily be straightened.

The flat traps proved themselves the most successful in the trapping of 2678 birds at Waukegan last year.

FIELD NOTES

A SEPTEMBER MOURNING DOVE BROOD

On the afternoon of August 31, 1921, while walking through a small "jungle" of crab apple trees, gooseberry bushes, and other small growth, I found a Mourning Dove sitting on a nest containing two eggs. The nest was built in a broken off crab apple tree, about four feet from the ground. The eggs hatched about a week later, and the young probably left the nest safely, although I did not see them after they were large enough to fly. Is this a late date for the Mourning Dove to be nesting in east central Iowa?

FRED J. PIERCE.

Winthrop, Iowa.

STAIN FOR BIRD HOUSES

A satisfactory stain for bird houses can be easily made from walnut hulls. The outside covering of a walnut, when rotted slightly, furnishes a good strong color. Rub it over the surface of the bird house and it produces a dull brown color which blends nicely with its surroundings and is pleasing to the eye of a bird. The stain will last several seasons, when it can be renewed. The stain, where walnuts are available, is especially desirable for the small types of bird houses, such as those for Wrens, Bluebirds, etc. FRED J. PIERCE.

Winthrop, Iowa.

A CROW THAT NEARLY "LOOPED THE LOOP"

Not long ago I noticed a Crow flying overhead carrying an article in his feet that looked like a mouse or something of the sort. This Crow wanted to transfer the morsel to his bill, and in trying to do so bent his head underneath him so far that he lost his balance and barely escaped overturning in the air. This must have surprised him considerably, but he was a determined Crow and shortly tried it again, with no better success. He was continuing his vain efforts when lost to view, but as his unsteady flight had brought him very near the ground, he doubtless alighted, where his object was accomplished with much less danger to his equilibration.

FRED J. PIERCE.

Winthrop, Iowa, Nov. 6, 1921.

ODD NESTING SITE OF PHOEBE

(*Sayornis phoebe*)

Perusal of one of my old note books brings to my attention a phoebe's nest constructed in the air-shaft of a coal mine near my home

in Des Moines, Iowa. The shaft had been abandoned and the top was on a level with the surface of the ground. A wire fence was rudely set up around the opening to keep stray cattle from falling in. The phoebes had chosen this site for their nest, which was fastened onto the side of the perpendicular walls seven feet below the surface of the ground. At the time of discovery, which was on May 12, 1914, the nest contained five eggs. I proceeded to collect these for my collection by using a long stick with a piece of copper wire attached to one end and bent into a loop for scooping up the eggs. Leaning over a cavity probably a couple hundred feet deep and about five feet square it was impossible to maintain sufficient equilibrium to bring all of the eggs up to the surface.

The question, however, which came to my mind was this: If the young birds should have hatched could they possibly have escaped from a birthplace so dangerously situated. Aside from the nest no projection offered itself as a stepping stone to the outside world. It would seem to be an impossible feat for young birds never before out of the nest to fly upwards for seven feet, especially to a species that under ordinary circumstances has the opportunity of a more easy downward flight at the time of their initial attempt. It seems quite doubtful also as to whether the young birds could cover the seven feet by climbing straight upwards clinging to the planks, twelve inches wide, which were snugly fitted together. Some birds might be provided by nature to escape from a similar opening, such possibly as the chimney swift, but I feel doubtful if the young phœbes would have been capable of the task.

At least I felt that the parents would be increasing their number more rapidly by immediately starting a new home in a more choice location than by spending the next few weeks in hatching out and raising the young to fall into the dark depths of the mine.

EMERSON A. STONER.

A BLUE-GRAY GNATCATCHER'S NEST

On April 23, 1921, near Ballard Normal School, Macon, Ga., an uncompleted Blue-gray Gnatcatcher's nest was discovered in a young elm tree. The nest was twelve feet or a little over from the ground, on one of the two main forks of the tree, and partly supported by a twig. It was deep, the outside covered with lichens, and to a casual glance appeared to be merely a large tuft of lichens. The tree grew beside a fence that ran along a lane, through which some hundred and fifty children passed to and from school each day, in addition to the numerous adults who also used the lane. Back from the fence a rather open, wooded area of pine mingled with several species of deciduous trees and a sparse undergrowth, largely species of Cratægus, sloped down to a small stream. A line of pines ran along the opposite side of the lane, and beyond this an open rocky field.

During the following week the nest was completed. By May 16, possibly earlier, the four young birds were hatched. Both parents assisted in feeding. Neither approached the nest directly, but always alighted first in some other part of the tree. The birds did not appear disturbed by the presence of several observers near the tree, so long as they were comparatively quiet.

For two or three days before leaving the nest the young birds climbed up to its edge. In fact it appeared as though there were not sufficient room for the four of them. Some two evenings before the young Gnatcatchers left the nest an Indigo Bunting, just learning to fly, alighted in the tree. The parent Gnatcatchers flew around the young Bunting, scolding, and nearly striking it, until it moved on to another tree.

May 26, late in the afternoon, the young birds left the nest. Just before dark all were seen on the fence or on the lowest twigs of Cratægus shrubs. The following morning three of the young Gnatcatchers were located in small trees or shrubs near the nest, none of them over five feet from the ground. They had already learned to fly a few feet. The fourth young bird was not located, but from the actions of the parents it appeared probable that it was in some of the bushes farther from the lane.

BERYL T. MOUNTS.

HOUSE WREN NESTING IN RURAL MAIL BOX

It is a well known fact that the House Wren will nest in any available nook or cavity that strikes its fancy regardless of what the object's use in the world happens to be. Hundreds of seemingly unsuitable places have been selected by this eccentric species as desirable home sites. I have heard of many of these unusual home selections and have seen a few, but on one occasion only have I known them to appropriate a rural mail box for this purpose.

A farmer with whom I am acquainted owned a mail box with a bad fitting cover. The receptacle was of the oblong box type, with a long hinged cover on the top, and when the cover was shut there was a large crack between it and the box.

This box chanced to catch the eyes of a pair of home-making House Wrens and presently the owner of the box found it partially filled with sticks. The sticks were a nuisance and were unceremoniously removed. But the wrens were not in the least daunted by this interference in their plans and continued to fill the box with more sticks as fast as they were removed, loudly berating any intruder in appropriate language, known only to the wren's spiteful vocabulary. After this state of affairs had prevailed for some time, with neither defensive nor offensive force giving way, the farmer's son built a nice little wren house and placed it on the mail box post. This cured the trouble immediately. The wrens' labors were apparently transferred to the new structure with no misgivings and, so far as I know, they return each year to nest in the little house, as they have now done for a number of years.

The bird house on the post attracted considerable attention from people passing by. One tourist, possessed of an abnormal "bump" of curiosity, drove in off the Grant highway, upon which he was passing, to inquire what the little box on the mail box post was for. He went away carrying his first bird protection lesson.

FRED J. PIERCE.

Winthrop, Iowa, Jan. 4, 1922.

AN UNUSUAL MORTALITY AMONG MIGRATING LAPLAND LONGSPURS IN NORTHWESTERN NEBRASKA

During the afternoon and evening of Sunday, February 19, 1922, large flocks of the western form of the Lapland Longspur, known as the Alaskan Longspur (*Calcarius lapponicus alascensis* Ridgway), descended into the White River valley of Dawes county in northwestern Nebraska. A few Horned Larks, probably *Otocoris alpestris enthymia* Oberholser, were also present in the flocks. Evidently the flight represented a great wave of northward migration. As evening came on a severe snowstorm developed, and the temperature dropped precipitately. The large flocks of these birds were observed flying low and confusedly in and about the towns of Chadron, Whitney and Crawford, in Dawes county, so that the air seemed filled with them. After nightfall the lights of the town and in windows of houses added further to the confusion of the birds.

On the following Monday morning large numbers of the Longspurs and a smaller number of the Horned Larks were found dead in various parts of these towns. At Chadron most of the birds were killed within a block of the intersection of the two main streets of the town where the lights seemed to have blinded them. Without doubt many of them were killed or maimed by flying against wires, the branches of trees, lighted windows, and buildings, in the towns, where they were found the next morning on the streets, sidewalks and lawns. But many died and were found lying on the ground in open places with no buildings near. The same flight that visited Dawes county extended west at least to Harrison, Sioux county, and east to Gordon, Sheridan county, where a similar heavy mortality occurred during the night of February 19.

Invariably the birds picked up and examined on Monday morning had their crops and stomachs entirely empty, indicating that the storm conditions or other cause had prevented any feeding for several hours before they descended into the region above mentioned. Had they just completed a long and wearisome diurnal migration? With little question they were hungry and exhausted so that they were unable to withstand the shock of the storm which descended upon them, many of them died of exposure during the night, aside from those dying as a result of collisions in their confused flying about.

On the night of Monday, February 27, 1922, much the same sort of catastrophe occurred at Spalding, Greeley county, near the eastern edge of the sandhills. The birds reached that locality in large flocks during the night, encountered a cold wave there, and on Tuesday morning their bodies were to be found by the thousands strewn along the streets and over the countryside adjoining. As in the case just described in northwestern Nebraska, the dead birds found in Greeley county showed clearly that they had had no food for some time before their death, and some were even emaciated. Some that were not dead, but practically helpless, when gathered up and brought into the warm of buildings, and provided with food and water, quickly revived, and when released flew strongly away. The Longspurs in the Greeley county flight were of the eastern form, the typical Lapland Longspur (*Calcarius lapponicus lapponicus* Linnaeus).

For details concerning the avian tragedies above described, I am in-

debted to Mr. L. M. Gates and Mrs. George Blinco, of Chadron, Nebraska, and Mr. P. A. Francois of Spalding, Nebraska, who also sent me fragments of the dead birds for accurate identification.

MYRON H. SWENK.

Lincoln, Nebraska.

A REAL SYCAMORE WARBLER

On June 22, 1918, I was standing on the bridge over the Big Barren River, three miles north of town, watching for any birds that might appear along the river. Near the end of the bridge stands a large sycamore tree. Because of the height of the bridge my eyes were on a level with the upper limbs of the tree. Suddenly a Sycamore Warbler darted in among the leaves and I heard the chatter of young birds still in the nest. As the place was inaccessible, either with glasses or by climbing, I gave the matter no more thought and had so far forgotten it that I failed to look for the nest when the leaves had fallen.

On April 19, 1919, I was again standing on the bridge when I happened to think of the experience of the year before. While I was telling some friends about it, we saw a Sycamore Warbler fly to the same place, seize some of the material of the old nest, which was now plainly visible, and fly with it to a much lower limb on the opposite side of the tree. Here we soon made out a nest in process of construction.

On April 8, 1920, I visited the place again and a Sycamore Warbler was building a nest on another limb, nearly on a level with the nest of 1918. I often visited the place in 1921, but failed to see either the bird or a nest. In all my experience as a bird student these are the only nests of this species that I have discovered, even though I have seen the bird in small numbers every summer.

GORDON WILSON.

State Normal School,
Bowling Green, Ky.

NESTING OF THE BELL VIREO

The Bell Vireo has been known at Red Cloud, Nebraska, for several years, but in 1920 we were favored with a study of the nesting bird for the first time. About July 10, 1920, one of my friends who is interested in birds and has a large garden with many fruit trees, told me of a bird that was new to him nesting in his lilac bush ten rods from the house. It was about two and one-half feet from the ground and near the outer edge on the south side, half covered by overhanging leaves and yet quite in sight. Four of us pushed aside the leaves and gazed at the tiny bird to our heart's content. She seemed to think, as her eyes twinkled, "I can see you all right but you cannot see me." I could not bear to put her off the nest for fear of injury or fright, so came again a few days later, with the same result. Saturday, July 17, I had to leave for over Sunday and feared the eggs would hatch in my absence, which they did, so I went with metric rule to take observations on nest and eggs. To my surprise, as soon as I neared the nest the bird flew off, quite nervous. As I wished first to study the line over the eye and a few other points, I

retired to the other side of the bush and the bird returned to the nest at once. On my approach, he jumped off again and began to sing the familiar notes of the Bell Vireo, thus confirming my previous diagnosis. I then examined the four eggs, all sharply ovate, three white and one twelve millimeters in length, with an irregular ring of pale brown spots around the largest diameter. The nest was less than two inches in diameter, inside measurement, and one and three-quarter inches deep. It was hung below a small horizontal fork, and made outside of the cotton of cottonwood trees or the silk of milkweeds and decaying paper bits, lined with tiny root hairs and other more brittle material. Before the birds could fly, something, cat or snake it may be, brought to naught this thing of joy. I have saved the nest to show my bird-loving friends, but not fastened to the twigs as it should be. It makes one wonder why the evolution of "the survival of the fittest" has not resulted in teaching all perching birds to build higher from their ground enemies, and I imagine that the answer is that they build today exactly as they did ten thousand years ago, not having yet been apprised of the law of evolution.

J. M. BATES.

Red Cloud, Nebraska.

Minutes of the Twenty-third Annual Meeting of the Nebraska Ornithologists' Union

The twenty-third annual meeting of the Nebraska Ornithologists' Union was held at Lincoln, Nebraska, Friday and Saturday, May 19 and 20, 1922. The sessions included an open program Friday afternoon, a dinner Friday evening followed by a business session, and a field day on Saturday.

The open program was given in Room 207, Plant Industry Hall, College of Agriculture campus, University of Nebraska, beginning at 3 p. m. on Friday. Sixty persons were present at the program. The first paper was an account of the "Nesting of the Bell Vireo" by Rev. J. M. Bates of Red Cloud, Nebraska, and, in the absence of the author, was read by the Secretary. Mrs. Addison E. Sheldon of Lincoln, then presented a paper on the "Home Life of the Brown Thrasher," illustrated with lantern slides, in which was given a synopsis of the principal happenings observed in connection with the nesting of a pair of Brown Thrashers just outside the window of the Sheldon home, in a bridal wreath bush. These birds were kept under constant observation by Mr. and Mrs. Sheldon from the time of the first beginning of the nest until the last fledgeling had departed from it, and every movement of the birds was noted and recorded during this entire period, from sunup till nightfall, thus forming a remarkable biography of this pair of birds.

Following these papers a symposium on the shore birds (*Limicolae*) of Nebraska was held. Prof. M. H. Swenk exhibited specimens showing most of the thirty-nine species of shore birds known to occur in the State in their various plumages, and explained the characters by which they could be identified, both in the hand and in the field. Prof. R. W. Dawson followed with a discussion of the migratory movements of Nebraska shore birds, based on all of the available data. Dr. R. H. Wolcott concluded the symposium with a discussion of the nesting habits of the shore birds, especially of the ten species known to nest in Nebraska.

At the conclusion of the program at 6 p. m., the members of the N. O. U. dined at the College of Agriculture Cafeteria, following which the business session was held. In the absence of the President, Dr. H. Hapeman of Minden, the Vice-President, Mrs. H. C. Johnston of Superior, called the meeting to order. The reports of the officers were received, and the financial report of the Secretary-Treasurer was referred to a committee composed of Mrs. Addison E. Sheldon and Mrs. L. H. McKillip, for auditing. The names of Mr. Gayle B. Pickwell of Lincoln, Mr. J. E. Plank, Jr., of Kearney, Mrs. Alfred Tooley of Central City, Mrs. Fred W. Tyler of Lincoln, and Mr. Leonard Worley of Lincoln, were proposed for membership, and all were elected.

Nominations for new officers were then made from the floor, and as a result the following officers were elected for 1922:

President—Mrs. Addison E. Sheldon, Lincoln.
Vice-President—Mr. Lucius H. Watson, Lincoln.
Secretary-Treasurer—Prof. M. H. Swenk, Lincoln.

The matter of a revision of the articles of agreement of the affiliation between the Nebraska Ornithologists' Union and the Wilson Ornithological Club, made necessary by the recent increase in dues in the Wilson Club to $1.50 for Associate members and $2.50 for Active members, was presented by the Secretary-Treasurer, and debated by the members. The Secretary-Treasurer read the draft of a revised set of six articles of agreement to replace those adopted by both the N. O. U. and the W. O. C. in 1915, and upon motion the revised articles were adopted by the N. O. U. The Secretary was instructed to present the revised articles to the W. O. C. for action.

It was moved by Mrs. Addison E. Sheldon that inasmuch as under their present charters cities and villages of less than 5,000 inhabitants in Nebraska do not have the power to pass and enforce ordinances to protect the birds and their nests and eggs within the city or village limits, that the N. O. U. declare itself in favor of extending this power to such cities and villages, the same as is granted in their charters to cities of 5,000 to 25,000 inhabitants, and that it use its influence to attain that end. This motion was seconded and unanimously passed.

It was moved by Dr. R. H. Wolcott that inasmuch as shore birds of nearly all kinds are decreasing rapidly over the entire country, and quite noticeably in Nebraska, and as the present Nebraska law regards black-bellied Plover, Golden Plover, Yellowlegs and Greater Yellowlegs as game birds, that it join with a group of progressive sportsmen in an effort to have only the Wilson Snipe among the shore birds recognized as a game bird in this state, and that it use its influence to attain that end. The motion was seconded and unanimously carried.

The matter of the field trips on the following day was then discussed, and it was decided that one party should start around Capital Beach west of Lincoln the next morning at 6 o'clock under the leadership of Messrs. H. B. Lowry and L. H. Watson, and that a second party should start an hour later under the leadership of Prof. M. H. Swenk. Another party including Prof. R. W. Dawson and Mesdames L. R. Button and G. A. Loveland was to visit the flats near Arbor, Nebraska, north of Lincoln, while a fourth party under the leadership of R. H. Wolcott was to work in the woods along Salt Creek between Lincoln and Saltillo.

Fifteen members were present at this session of the N. O. U., as follows: Mesdames Lily R. Button, Margaret M. Corey, Blanche Garten, F. C. Johnston, G. A. Loveland, L. H. McKillip, E. H. Polley, Mary St. Martin and Addison E. Sheldon, and Messrs. R. W. Dawson, L. O. Horsky, H. B. Lowry, M. H. Swenk, L. H. Watson and R. H. Wolcott. Adjournment took place at 8 p. m.

On Saturday, May 20, the twentieth annual field day of the N. O. U. was held, according to the plans outlined the previous evening. The total list of the day included one hundred and five birds, the largest list ever obtained on any N. O. U. field day, as follows:

Bluebird, Robin, Olive-backed Thrush, Wood Thrush, Long-tailed Chickadee, White-bellied Nuthatch, Western House Wren, Brown Thrasher, Catbird, Mockingbird, Yellow-breasted Chat, Maryland Yellowthroat, Yellow Warbler, Bell Vireo, Yellow-throated Vireo, Warbling Vireo, Red-eyed Vireo, Migrant Shrike, Rough-winged Swallow, Bank Swallow, Barn Swallow, Cliff

Swallow, Purple Martin, Scarlet Tanager, Dickcissel, Indigo Bunting, Western Blue Grosbeak, Rose-breasted Grosbeak, Cardinal, Towhee, Lincoln sparrow, Song Sparrow, Western Field Sparrow, Clay-colored Sparrow, Goldfinch, Bronzed Grackle, Baltimore Oriole, Orchard Oriole, Meadowlark, Western Meadowlark, Red-winged Blackbird, Yellow-headed Blackbird, Cowbird, Bobolink, Crow, Blue Jay, Prairie Horned Lark, Traill Flycatcher, Wood Pewee, Phœbe, Say Phœbe, Great-crested Flycatcher, Arkansas Kingbird, Kingbird, Chimney Swift, Nighthawk, Yellow-shafted Flicker, Red-headed Woodpecker, Northern Downy Woodpecker, Hairy Woodpecker, Yellow-billed Cuckoo, Long-eared Owl, Broad-winged Hawk, Cooper Hawk, Marsh Hawk, Mourning Dove, Turnstone, Piping Plover, Semipalmated Plover, Killdeer, Black-bellied Plover, Spotted Sandpiper, Western Willet, Solitary Sandpiper, Yellowlegs, Hudsonian Godwit, Sanderling, Semipalmated Sandpiper, Red-backed Sandpiper, Least Sandpiper, Baird Sandpiper, White-rumped Sandpiper, Pectoral Sandpiper, Stilt Sandpiper, Long-billed Dowitcher, Wilson Phalarope, Northern Phalarope, Coot, Carolina Rail, King Rail, Green Heron, Great Blue Heron, Bittern, Lesser Bluebill, Shoveller, Blue-winged Teal, Mallard, White Pelican, Black Tern, Franklin Gull, Ring-billed Gull and Eared Grebe.

Two very interesting nests were observed on this field day, namely those of the Say Phœbe and Piping Plover. The Say Phœbe is a western flycatcher, not common even in migrations east of the 99th meridian, and heretofore rarely noted at Lincoln, yet a pair was found building a nest in characteristic fashion on this day. The nesting of the Piping Plover constitutes the second record for Lincoln, a nest with the full complement of four eggs being found. A newly finished nest of the Red-winged Blackbird with one Cowbird egg in it, but no eggs of the owner of the nest, was found.

Report of the Treasurer, 1921-22

Receipts

Cash on hand, May 13, 1921	$93.96
Annual dues collected	68.00
Sale of publications	
Interest on investment	$10.88
Cash on hand, May 13, 1921	$ 93.96
Annual dues collected	54.00
Sale of publications	5.20
Interest on investment	10.88
	$164.04

Expenditures

Wilson Bulletin (subscriptions)	$ 54.00
Wilson Bulletin (donation)	30.00
Postage	1.00
Balance on hand, May 19, 1922	79.04
	$164.04

NOTES—HERE AND THERE

Conducted by the Secretary

The Western Section of The American Association for the Advancement of Science, holds a summer meeting this year at Salt Lake City June 22-24. The program is replete with features of interest to students of nature and it is hoped that our members in that section will join forces with the Inter-Mountain Chapter of The Cooper Ornithological Club to see that ornithology is well represented. Mrs. A. O. Treganza of Salt Lake City, is Chapter Secretary of The Cooper Club.

Professor Thomas L. Hankinson of Michigan State Normal College, Ypsilanti, announces that the summer school at that institution will include a course on "The Birds of Michigan," June 20 to August 4. Many other colleges now include such courses in their summer schools.

The Indiana Audubon Society held its twenty-fourth annual meeting May 12 and 13 at Indianapolis, in coöperation with The Nature Study Club of Indiana. A fine program had been arranged, which included motion pictures of bird-life and several interesting field types. Mr. Frank C. Evans of Crawfordsville, is Secretary.

Professor Dayton Stoner of the Department of Zoölogy, University of Iowa, is one of a party of six from that university which sailed from Vancouver, B. C., on May 14 for the Fiji Islands and New Zealand. A zoölogical reconnaissance of Viti Levu, Fiji Islands and of North Island, New Zealand, will occupy the time of the members of the party during the entire summer. Professor and Mrs. Stoner will devote their efforts mainly to the birds and insects.

There has been considerable activity in the past few years in the sale of second-hand books on ornithology and other branches of natural history. The writer receives catalogs and lists quite frequently from no less than half a dozen dealers who specialize in literature along these lines and will be glad to furnish the addresses to any members who may be interested.

Hawk and Owl Clubs are in vogue in several of our states, sponsored, we are told, by several of the ammunition companies. In the state of Virginia the detrimental results are being felt in the heavy damage to fruit trees occasioned by gnawing of the roots by a largely increased rodent population. The Biological Survey is authority for the statement that a million dollars would not cover the loss there during the past few years and that in the vicinity of Winchester alone at least $250,000 worth of apple trees have been killed. Wilson Club members should be prepared to combat the organization or perpetuation of such clubs in their respective states.

Dr. Lynds Jones, our Editor, will take his usual transcontinental ecology trip this year, beginning June 23, and ending August 4 at Newport Beach on the Pacific Coast. Dr. Jones knows well the trail ere this and we can only wish him even greater success than in former years.

The Tennessee Ornithological Society gave an ornithological exhibit in the Art Hall of the Nashville Carnegie Library throughout the month of April. Its purpose was to illustrate the work being done by the Audubon Societies and to educate the public to the attractiveness of bird study as a recreation. A comprehensive exhibit included many hundreds of mounted birds, skins, nests, eggs, books, pictures and bird boxes. The T. O. S. is now closing its seventh year.

Approximately 15,000 binoculars and field glasses were recently sold at retail, by the Government at attractive prices, through The Ordnance Salvage Board, Frankford Arsenal, Philadelphia, Pa. Notice of future sales, if any, will be given in this column if the information can be gotten in time.

The Biological Survey is experimenting with the use of poison gasses, developed during the war, for exterminating noxious birds and rodents. Large roosts of English Sparrows exist in and about every city; the writer knows of one extensive hawthorn thicket, in the outskirts of his home town, which is used nightly, throughout the winter, by perhaps half a million sparrows, grackles and cowbirds. Marsh roosts of western blackbirds, prairie dog towns and fields infested with spermophiles are among the possibilities for this method of control.

The Secretary has just returned from a trip which comprised sixteen interesting days in the Cumberland Mountains and on the upper Cumberland River, in Tennessee. Active field work enabled him to record observations of considerable interest as well as to add some choice specimens to his collection. Incidentally, the trip is his alibi for the brevity of these notes.

PUBLICATIONS REVIEWED

BIRDS OF SOUTH DAKOTA. By William H. Over and Craig S. Thoms. Bulletin No. 9, South Dakota Geological and Natural History Survey (which is also) Bulletin No. 9, Series XXI, of the University of South Dakota. Vermillion, South Dakota. 142 pages, 20 plates and colored frontispiece. March, 1920.

This Bulletin, in which it has been the aim of the authors to secure as complete a list as possible of the birds of South Dakota, enumerates 322 forms.

Part I consists of brief discussions on the importance of bird study, various means of attracting and conserving birds, the economic relations of the group, coloration and changes in plumage, and closes with a short account of bird migration.

Part II is made up of a "List and Description of Birds of South Dakota." Here a lack of uniformity of presentation is apparent which might lead to difficulty for one unfamiliar with the classification of birds. The order Raptores is the only one mentioned and clarity as well as completeness would have been more apparent if at least the names of the other orders had been given in their proper places. In the discussion of the Anseres, while the members of the subfamilies Merginae, Anserinae and Cygninae are discussed under these headings, the members of the subfamilies Anatinae and Fuligulinae are lumped together under one heading and the reader is left to his own resources in separating the species of each subfamily. The same criticism pertains to the discussion of the Families Odontophoridae and Tetraonidae and to that of the Colymbidae and Gaviidae. In many cases the diagnoses of species and subspecies are scarcely sufficient and in other instances the identification marks given might be considerably improved upon, *e.g.* that of Lincoln's Sparrow. For certain species in which a considerable difference in color between the sexes prevails the color of the male only is given, *e.g.* Wilson's Warbler and the Redstart.

Numerous slips in typography such as misspelled specific names, capitalization of the first letter of some specific names, the printing of the word "subfamily" in some places as an entire word and in others as two words and the misspelling of the common name of *Rhynchophanes mccowni* mar the appearance of the paper and lead the reader to think that perhaps the authors were in too great haste to rush into print.

On page 129 the statement that "The Dipper or Water Ouzel is a slate-colored Thrush" is somewhat misleading; and surely the Swamp Sparrow as well as, perhaps, a few other species of birds not mentioned in the report should have been included.

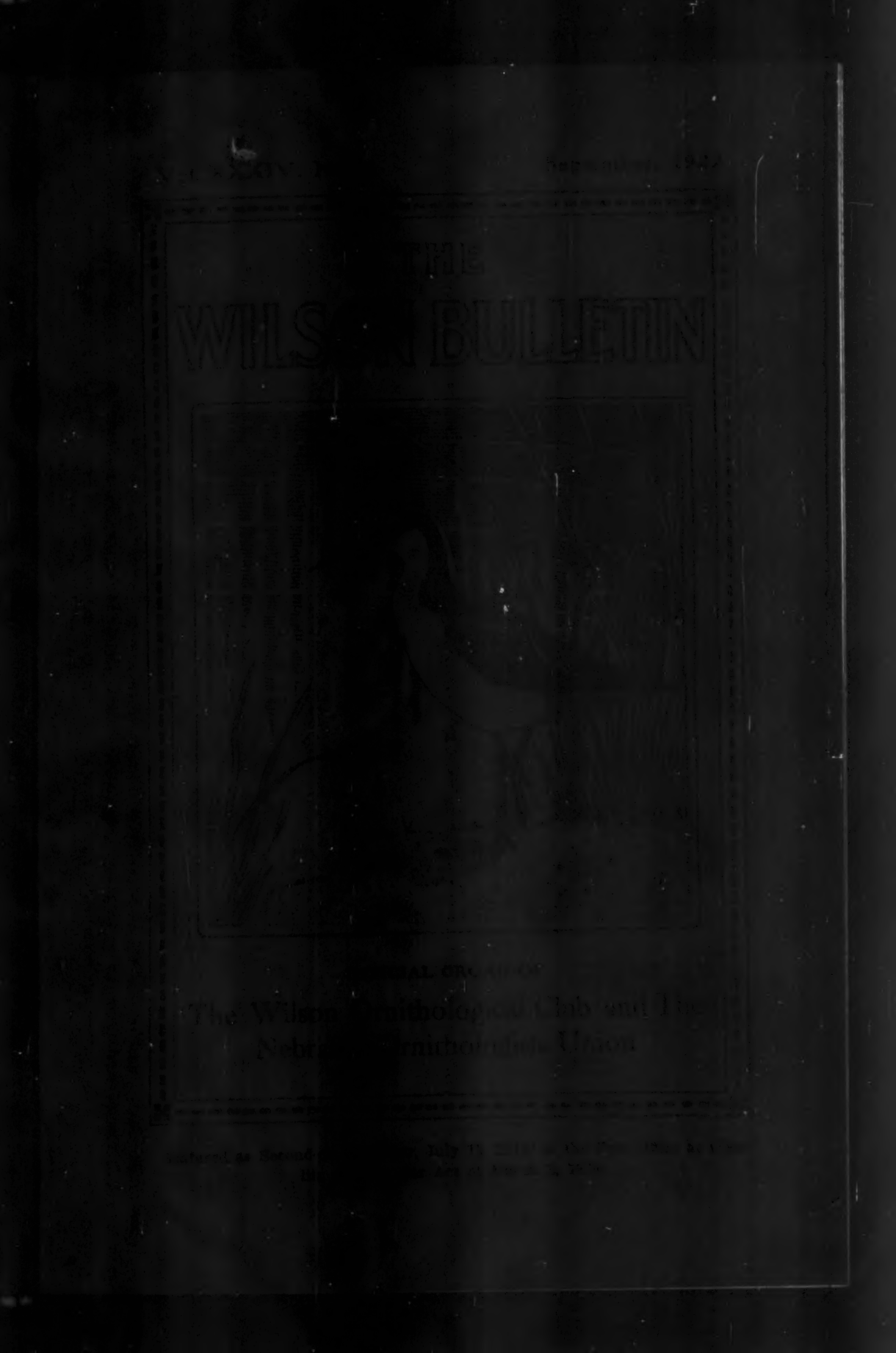
Part III consists of a brief "Bibliography" in which some of the citations are scarcely sufficiently definite.

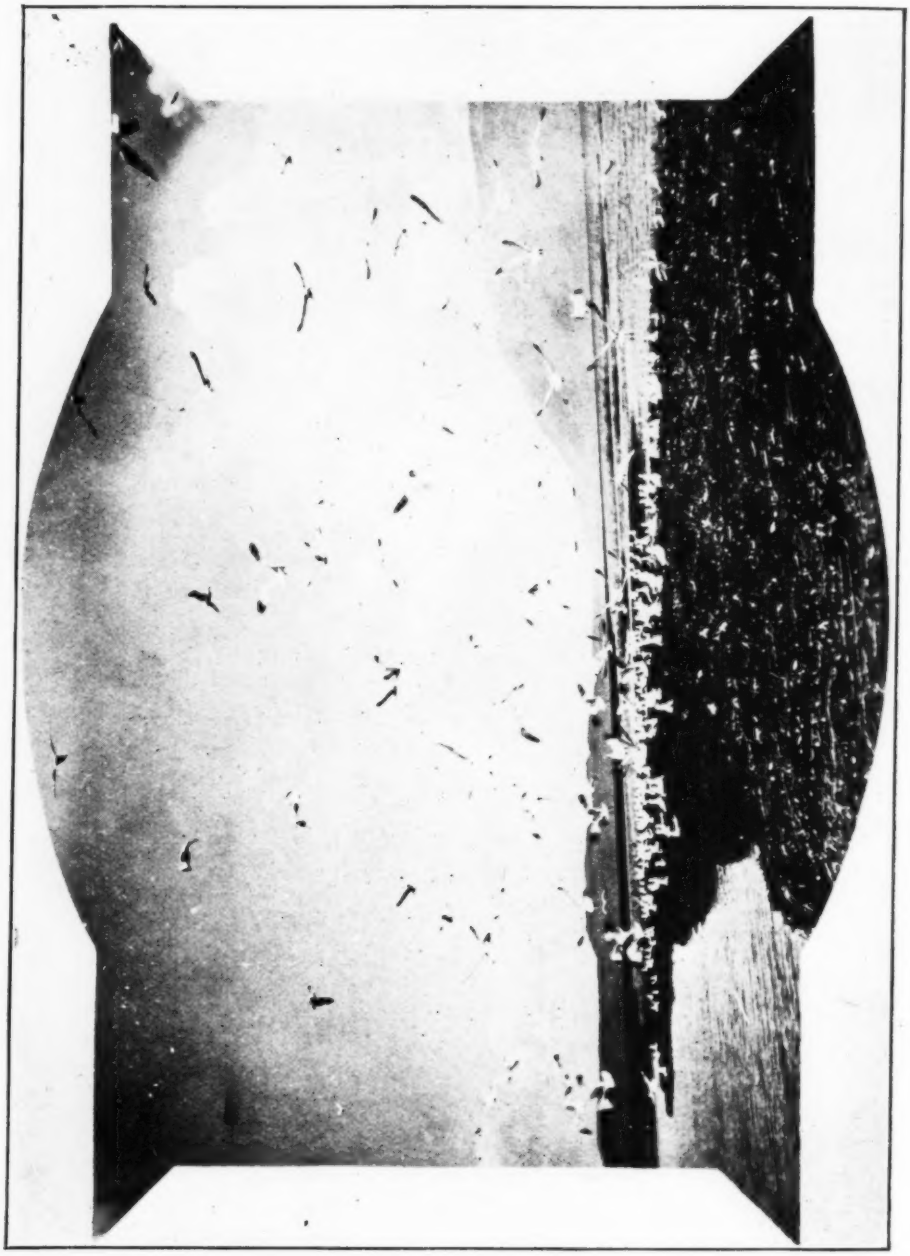
Scattered throughout the text of the Bulletin are the twenty plates, one of which is duplicated, and most of which are very good. They are reproductions from photographs and illustrate nesting boxes, baths, food boxes, nests and eggs and various species of birds. However, a happier

grouping of the subjects on certain plates might well have been indulged in.

The colored frontispiece of the Meadowlark, the work of Bruce Horsfall, is borrowed from the National Association of Audubon Societies.

In spite of its obvious defects this paper shows a trend in the right direction in the way of stimulating interest in birds and bird study and furnishes a substantial background for the recognition of South Dakota birds. D. S.





Ring-billed Gulls and Caspian Terns
500 Nests on the Island, June 22, 1922